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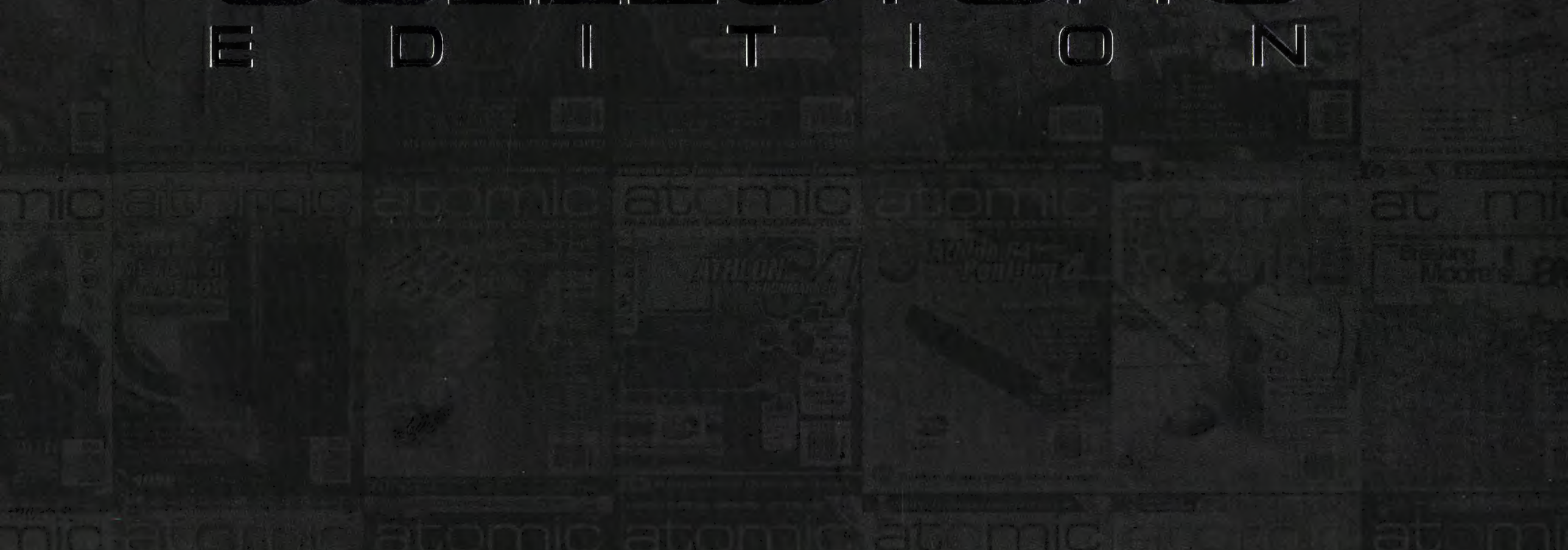

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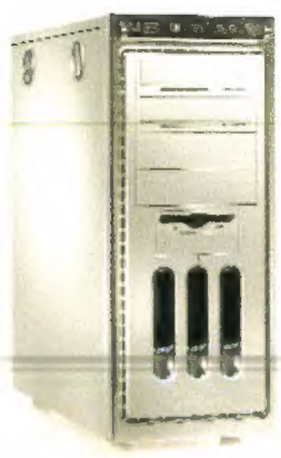

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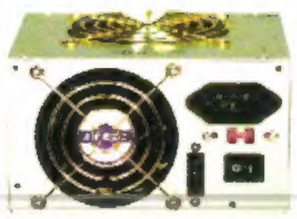

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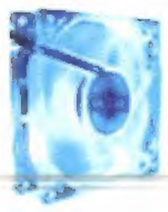

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The A-Team

It's four years to the day that a crack team of commando nerds escaped the prison of computer mag mainstream monotony and brought hardcore tech to the masses. On the run from the government, the Empire, and ice-cream wielding schoolgirls they ran underground and survived as geeks of fortune. They schemed to overclock PCs and mod cases for those less fortunate than themselves, and, in the depths of their brilliant tweaks and violated product warranties, *Atomic* was born all shiny and new.

Ben 'Hannibal' Mansill led the team, taming foes to and fro with his super-sharp, sizable wit, all the while smoking cigars and holding himself in a way only a manly man can.

Bennett 'Howling Mad' Ring chewed gum and threw around a lot of chairs, while impersonating a crazy mad person, to beat hardware into submission and give it a new master. The *ring* master.

Logan 'The Face' Booker would bend his enemies over shark pit and wine glass alike using nothing but his infallible charisma and curiously attractive smile.

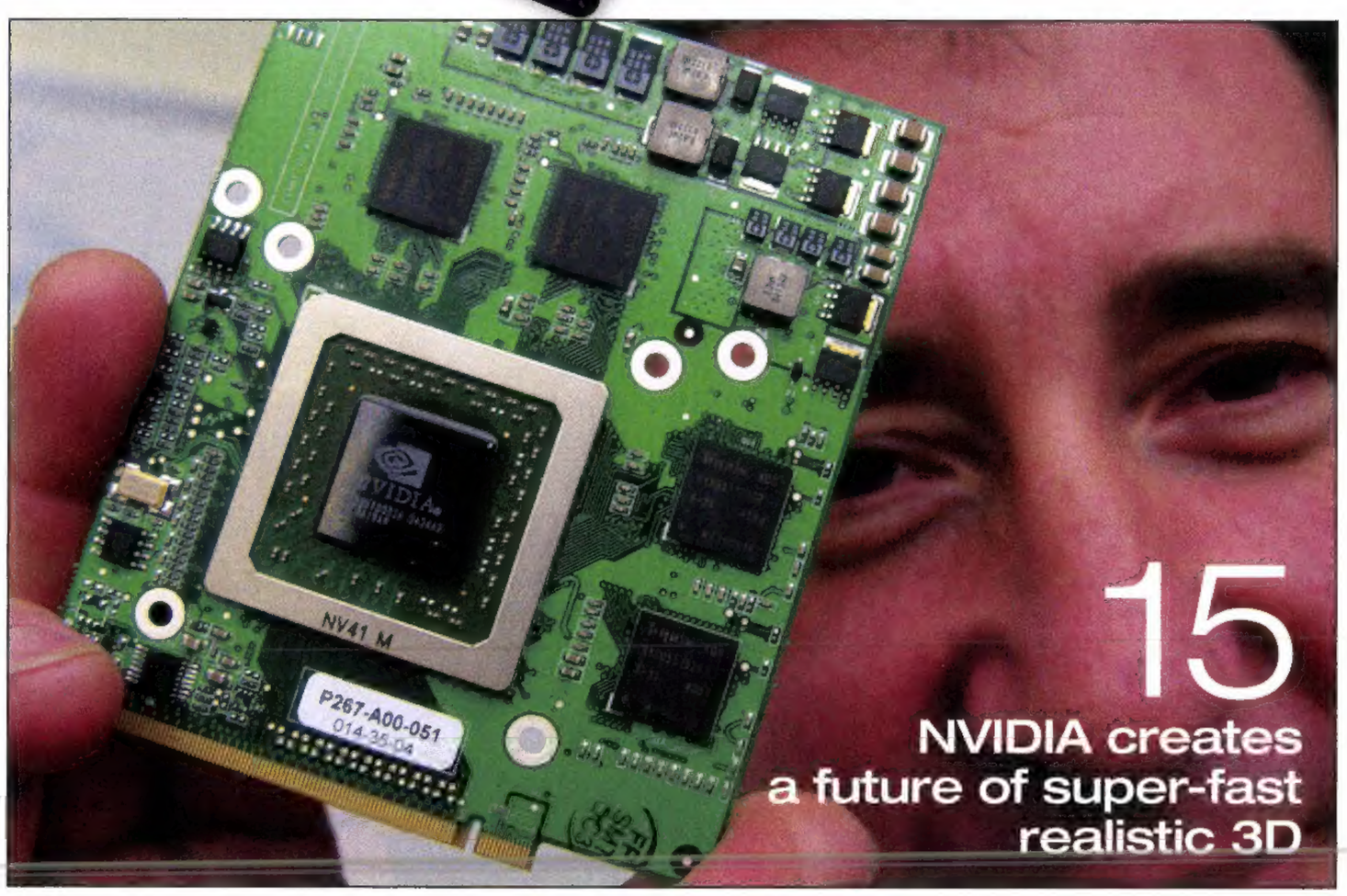
John 'Bad Attitude Baracus' Gillooly feared no sucka, didn't suffer foo's gladly, and wasn't getting on no plane for no one! His shiny gold bling-bling blinded enemies into compliance, and none could argue with his well-phrased words of wisdom. Stay in school, fool!

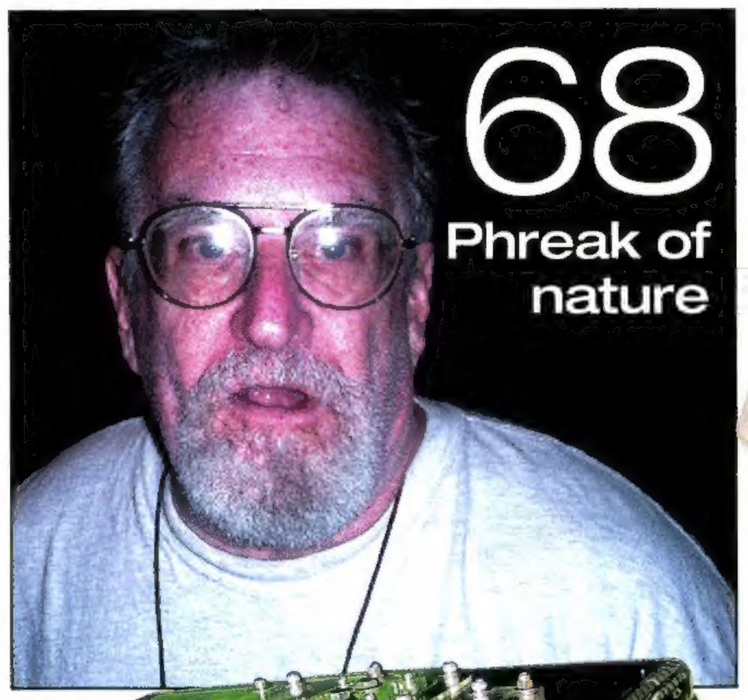
Over the years the faces have changed -- Nathan 'meatbites' Davis and Bill 'AsianDrunk' Chan have joined the team, among others, but 50 issues later the spirit is still the same. Atomic delivers, on time, the poetic justice of hardcore tech each and every month.

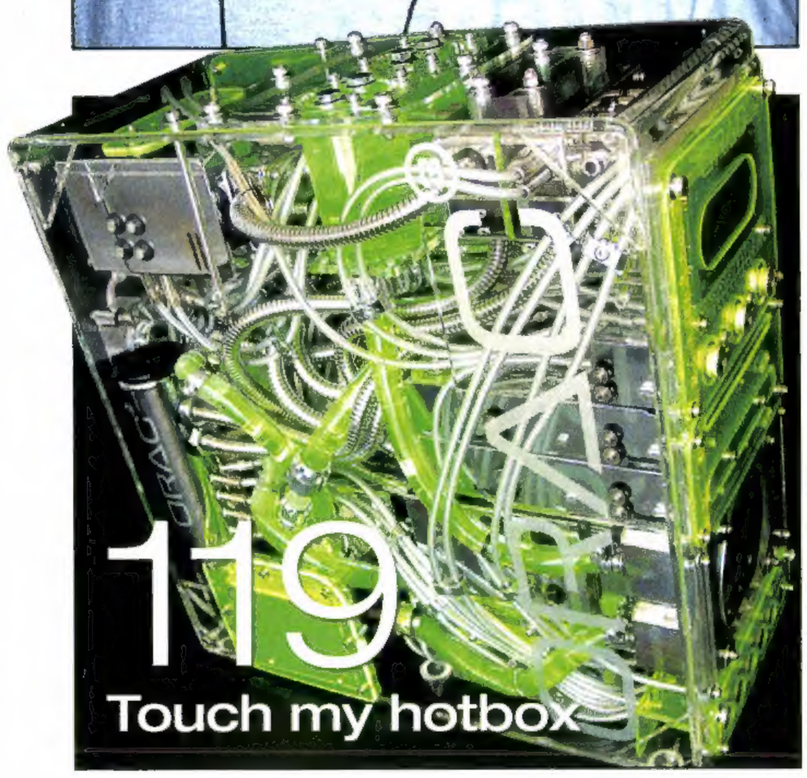
So if your CPU needs cooling, or your drive saving, or your video card tweaking, and you're lucky enough, you just might just run into... *Team Atomic.*

Ashton 'Martigen' Mills

amills@atomicmpc.com.au







The Atomic Collection

Welcome to the Atomic Collection Part 1!

This month's cover CD contains the first 25 issues of *Atomic*, dating right back to Issue 1 first published in February 2001. They represent a complete archive of *Atomic's* history, and content that's so cutting-edge that it still applies today. Want to see inside the Xbox? See Issue 12. Want to build a Linux gateway server? See Issue 20. Want to teach your Sony AIBO new tricks? See Issue 16. All this is there and much more.

The issues are stored using an all-new, high quality, cross-platform electronic format known as *DjVu*. You can view, move, zoom, search, and print any part of any issue of *Atomic*. It's cutting-edge publishing for a cutting-edge magazine.

In the true spirit of *Atomic* the files on the CD are the original *Atomic* source. The raw underbelly, the blueprints of *Atomic*, page by page, issue by issue. And now they're yours. This is our gift to you, Part 1 on this CD and Part 2 on next month's, for new and current readers alike, to own every single issue of *Atomic* ever made. We can't think of a better way to celebrate *Atomic's* 50th Issue.

So browse the CD, read up on ground breaking features, complete cutting-edge tutorials, laugh at classic game reviews and see just how far we've come since *Atomic* first turned the world of computer magazines on its head and made PCs fun again.

Enjoy,

The *Atomic* Team

whats inside

atomic 50

...and where else do you hang out online?

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shortcircuits

id's John Carmack is attempting to revitalise the once proud tradition of the .plan by setting up a blog on his aerospace website, **www.armadilloaerospace.com**. Back when game developers lived out of garages and other types of housing of questionable council approval, they would regularly post updates of their progress online. You can check out Carmack's newest additions here: **www.armadilloaerospace.com/n.x/johnc**. In the latest update he discusses both the Quake 3 source and fragment coding in hardcore geek-speak.

Microsoft has released three new critical exploit updates for its Windows 2000 and XP operating systems. One of these updates fixes the animated cursor exploit found just recently that allows malicious code to execute simply by viewing an affected email or web page. According to the Microsoft security bulletin MS05-002: 'An attacker who successfully exploited this vulnerability could take complete control of an affected system.'

The US Federal Bureau of Investigation may have blown US$170 million on a software package, according to a January story on Reuters. Called 'Virtual Case File' the software was originally designed to allow FBI agents to quickly transfer information between each other, whether they were out and about or stuck behind a desk. However, the Reuters story quotes an anonymous 'FBI official' describing the software as 'already outdated and inadequate, with the bureau able to use only about one-tenth of the program.' Go U-S-A.

Considering these days the only way you're going to get hit by spyware is if you're running a Windows box – and especially so if you're using Internet Explorer – Microsoft has been busily working on a spyware scanner. A beta version, called Microsoft AntiSpyware, is available from: **www.microsoft.com/athome/security/spyware**.

With the release, the company has officially acknowledged spyware as a serious problem, one serious enough to prompt development of dedicated software to combat it – much like its plans to release anti-virus software in the near future.

Microsoft will keep abreast of spyware developments with SpyNet – a community made up of volunteer users who will have the ability to submit suspicious programs for inclusion in the scanner's spyware definitions.

Perhaps the greatest benefit of the software will be its thoroughness – while programs such as Spybot and Ad-aware go to great lengths to purge systems, Microsoft knows its operating systems best and should be capable of removing even the most troublesome and assertive of spyware programs. Some versions of the adware program CoolWebSearch, for instance, can hide within browser executables making them almost impossible to discover and remove, short of trawling through system memory and individual process handles.

An interesting question is what Microsoft defines as 'spyware'. Some programs, such as discreet's 3ds max, install a resident version of Macrovision's SafeDisc technology, known as 'C-Dilla'. Certain spyware removers detect this as spyware, and will happily kill it, effectively stopping the user from running 3ds max without a re-install. Who knows where Microsoft will draw the line.

The art of remarking a processor is neither new nor hard – take one CPU and clock it to a faster speed, mark with said speed, sell. Well, it's that easy until someone finds out, and it's a real bummer – for the remarkers anyway – when it's AMD who blows the lid of your kooky money-making scheme.

A bunch of businesses in Tainan, Taiwan, were on the receiving end of raids conducted by investigators last November, who, unsurprisingly, were after suspect AMD processors. According to an EE Times story on the operation, over 60,000 remarked AMD CPUs were seized – a number that's hard to verify as AMD is remaining tight-lipped over the raids. A spokesperson for the company has said that this will remain the case, but it's entirely possible more details will be released once AMD has finished investigating.

Obviously, the smart thing to do is to check your processors before you buy them – remarked CPUs are easy to spot if you look close enough. Usually signs of foul play appear as scuffing or scratching of the heat spreader surface to fudge speed ratings and the like.

Of course, this is something every *Atomic* reader does by default. How else would you find out the week and batch numbers, eh?

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Artomic of the Year 2004

Without pretty pictures, life would suck lemons, or grapefruits, depending on your tolerance for bitter things. They make the world go round, much like gravity makes, well, the world go round.

Atomic realised early on – *Issue 27* in fact – that it was important to nurture creativity, and to love, stroke and feed it at regular intervals. In this case, the interval was deemed to be monthly, and Artomic was born.

The idea: to place community-created pieces of art into the magazine to introduce its two core sections at the time: hardware and game reviews. For the most part, budding artists were free to do what they wanted, as long as their work remained true to one of the above sections – for example, a hardware Artomic entry could be based on a video card or robot, while a game Artomic could involve a marine shooting stuff up. Whatever.

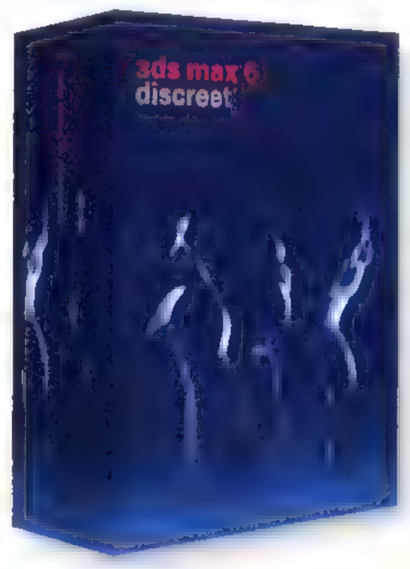
At first, we were unsure of what sort of response we'd get. Luckily, it was crazy. Each month from *Issue 27* onward, we received works of varying themes, and while the quality of some was highly questionable, and others had little to do with games, hardware or in fact, reality, they were all creative, inventive and surprising.

Unfortunately, Artomic of the Year has no second place. What it does have is a first place and boy, is it a first place.

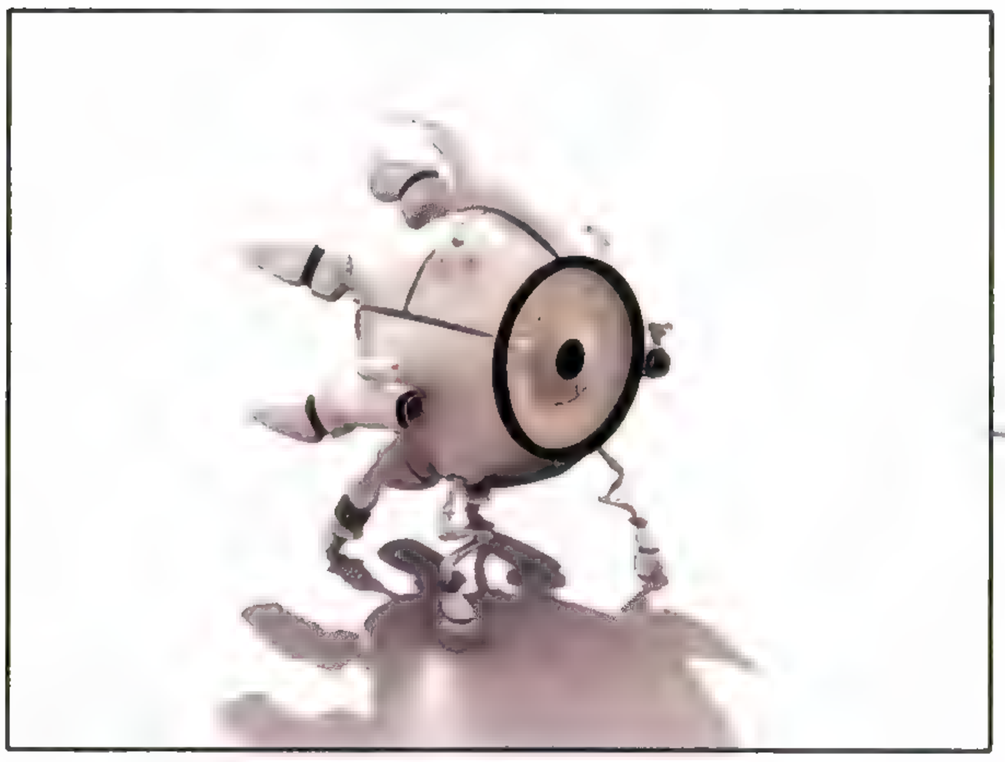
So, without further yammering, it gives us great pleasure to announce *The Artomic Pod Project* by Nicholas Bedford as the winner of this year's fine competition.

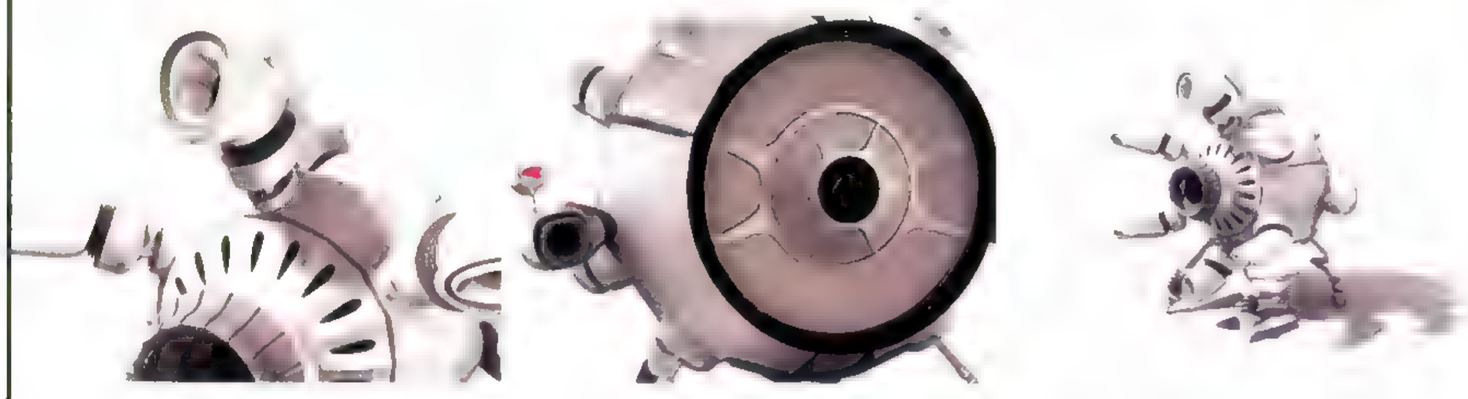
For his efforts, Nick will receive a full copy of discreet's (**www.discreet.com**) 3ds max animation suite. It's worth well over $9000, and includes everything you could possibly want in a 3D modelling and animation package.

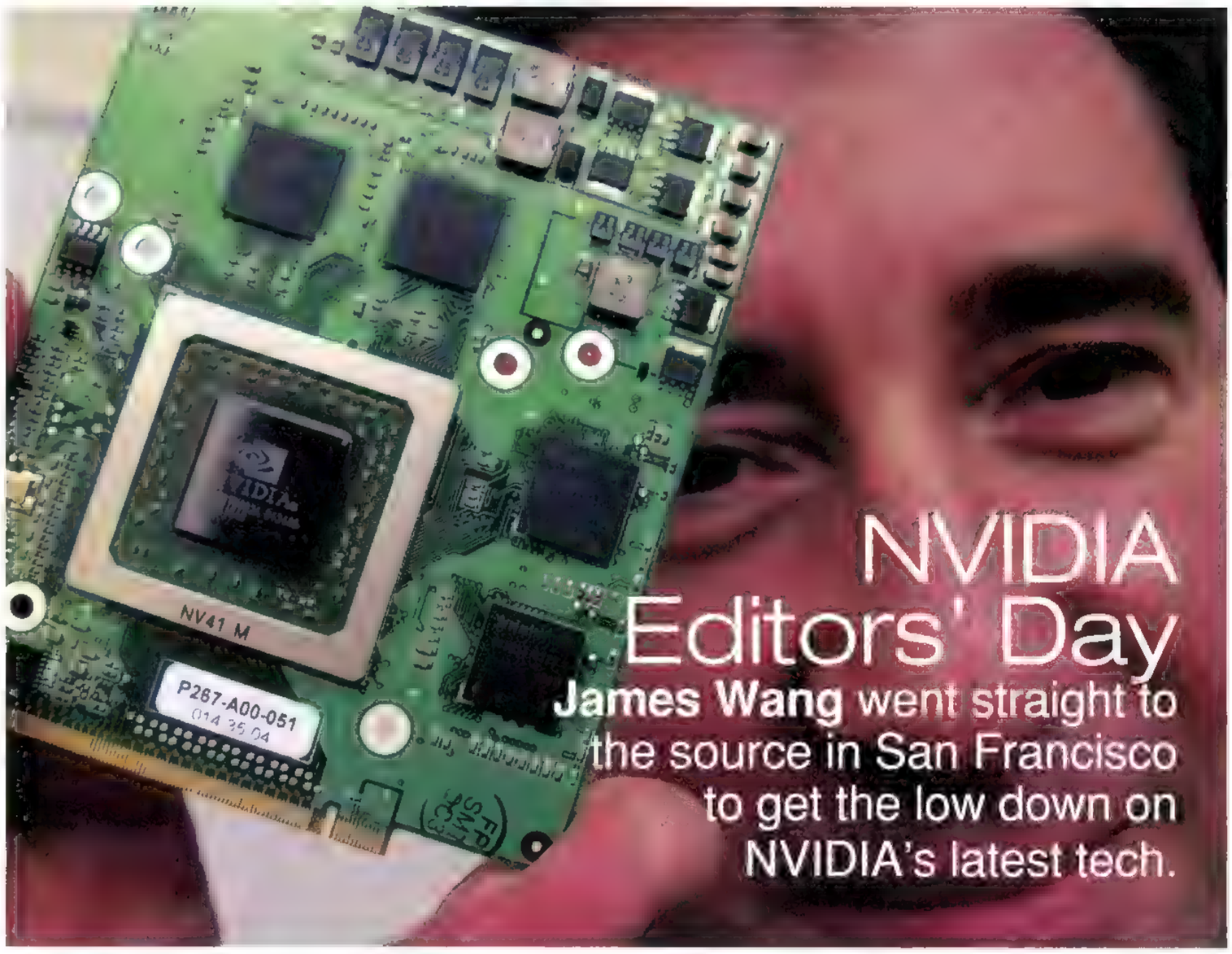
Congratulations Nick on a great piece of artwork – it wasn't easy choosing from the Artomics that have been featured in the magazine over the past year, and it was even harder sorting through the finalists.



Eventually, however, the choice was collectively made by our immortal team of sexy designers, and Nick came out on top.







NVIDIA Editors' Day

James Wang went straight to the source in San Francisco to get the low down on NVIDIA's latest tech.

NVIDIA's Editors' Day had an all star cast. First up is Jen-Hsun Huang, the CEO, president and founder. Smooth and serious, Mr Huang talks with the detachment of a philosopher. Contrasting his sombre mood is the bright and snappy vice president of Technical Marketing, Tony Tamasi. Once the marketing director at 3dfx, not only does he understand the hardware's every technical detail, he can translate them into English and shoot them back at the reporter faster than a machine gun can spit bullets. The supporting cast is no less impressive. John Montrym, NVIDIA's chief architect, said to have forgotten more about graphics than 'all of us have ever known', covered the most technical questions.

Mr Huang is a superb spokesman. He has the ability to turn a tough question into an opportunity to glorify NVIDIA's past products and future plans. When asked by a reporter if NVIDIA's diversification into motherboard chipsets (which he insists being called MCPs or Media Communication Processors) and consoles may distract from NVIDIA's core graphics business, he turned it into a history lesson on the NV1 (NVIDIA's first product). He paced the room advocating NV1's virtual memory system and how it had AGP features long before the specification was invented. I was more fortunate when I coined to him the possibility of CPUs and GPUs being on a distant collision course. He was clear to reject it. 'A GPU is not becoming like a CPU at all – not at all,' he said. Mr Huang sees distinct purposes for both and little commonality. 'I have no belief whatsoever that the two will converge.'

Jen-Hsun Huang, the CEO, president and founder of Nvidia.

Mr Tamasi presented the main technology – the new Geforce 6200 with TurboCache. While it's easy to dismiss TurboCache as an insignificant low end feature, it has some real and impressive substance.

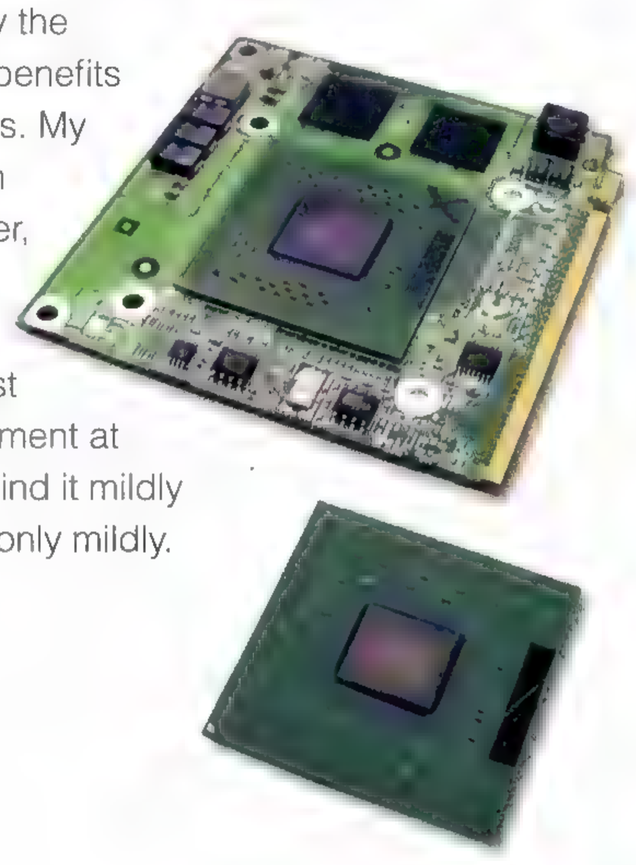
Essentially, TurboCache is a generalised method to exploit PCI Express and system memory for additional graphical storage and bandwidth. NVIDIA was at pains to emphasise that renderable surfaces (texture maps that are created dynamically at run time rather than pre-compiled textures) were becoming increasingly important in game engines and they took exceedingly more memory. Given that 3DMark2005 generates 48MB of renderable surfaces (excluding texture and geometry data), it's not far fetched that with high quality rendering, these renderable surfaces would exceed the meagre local memory on entry level graphics cards. TurboCache solves this problem as such surfaces can be rendered directly into system RAM. More memory can be allocated and removed as needed, never permanently hogging system memory.

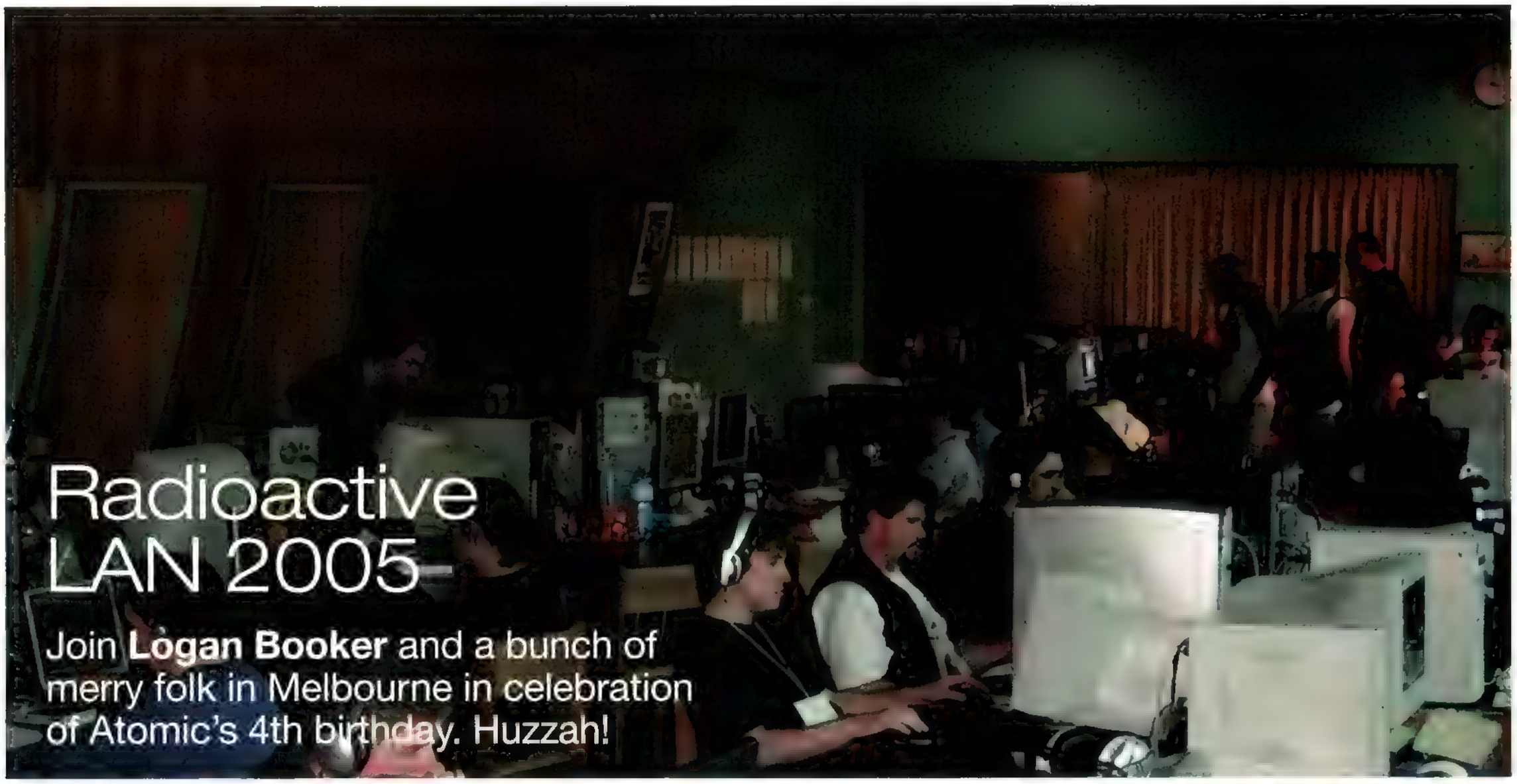
NVIDIA also reaffirmed their commitment to MXM, the standard they announced recently for mobile GPUs. Admittedly, the first impression of MXM was that NVIDIA was trying to push a proprietary connector that'll allow a few niche notebooks to upgrade their NVIDIA GPUs. After an exhaustive discussion with Rob Csongor, the general manager for NVIDIA's mobile GPUs, I was presently surprised.

MXM is a standard that determines a range of 'connectors' and other specifications for laptop GPUs. There are three sizes to choose from, with the largest (MXM-III) offering the highest performance and the smallest (MXM-I) offering the least power consumption. There's also a beefed up version found in high end desktop replacements called MXM-HE that supplies the GPU with even more power.

Two facts are striking about MXM. First, that it's an open specification; second, that in its current incarnation, MXM does not allow the user to upgrade their mobile GPU. The main benefactor of MXM is actually the laptop maker, who enjoys much greater flexibility and ease when choosing the GPU for a given laptop. They can essentially design a laptop down to the last screw without considering what GPU to use. In the last minute, they can choose any GPU that is available for that MXM connector, be it ATI or NVIDIA. Incidentally, pictures of RADEON based MXM board have already surfaced.

In order for laptop GPUs to be upgradeable, the MXM spec will have to incorporate heat and volumetric constraints. If such graphics cartridges (a GPU on a MXM connector with integrated cooling) become available, then mobile users can finally enjoy the upgradeability benefits of desktop users. My impression from NVIDIA, however, is that they are neither too keen nor against such a development at this time. They find it mildly interesting, but only mildly. Bugger.





Radioactive LAN 2005

Join **Logan Booker** and a bunch of merry folk in Melbourne in celebration of Atomic's 4th birthday. Huzzah!

Melbourne, it seems, is the place to go these days if you want to enjoy sheer awesomeness in seriously unhealthy and out-of-control doses.

First it was the Australian Game Developers Conference, home of all things Australian and developer; and now it's the double-barrelled action of Beer-a-thon V8.0, a semi-regular event held by Atomicans where, as the name says, vast quantities of liquid joy are consumed; and Radioactive LAN, the official celebration of *Atomic*'s fourth birthday.

Yes sir, *Atomic* has been around for four incredible years. Easily the best years in the entire universe. No one can say it hasn't been exciting and fun, because it has. If you need an example of just how fun, all you had to do was turn up to this year's Beer-a-thon. If you didn't go, then heck, you missed out on some serious socialising.

Held on 7 January in the welcoming embrace of Pugg Mahones, a friendly little pub in the heart of Melbourne on the appropriately named Hardware Lane, Beer-a-thon went off like a sock full of bees.

'the dude', a long-time *Atomic* lad and all-rounded bearded ronin, dispensed free tattoos to willing party-goers using his patented technology, the 'permanent marker'. the dude went all out, crafting his exotic designs on the exposed skin of his clientele. This of course, was much to the chagrin of certain kindly Melbournites, who had provided sleeping arrangements for out of state travelers.

Not exactly Dance Revolution, but hey.

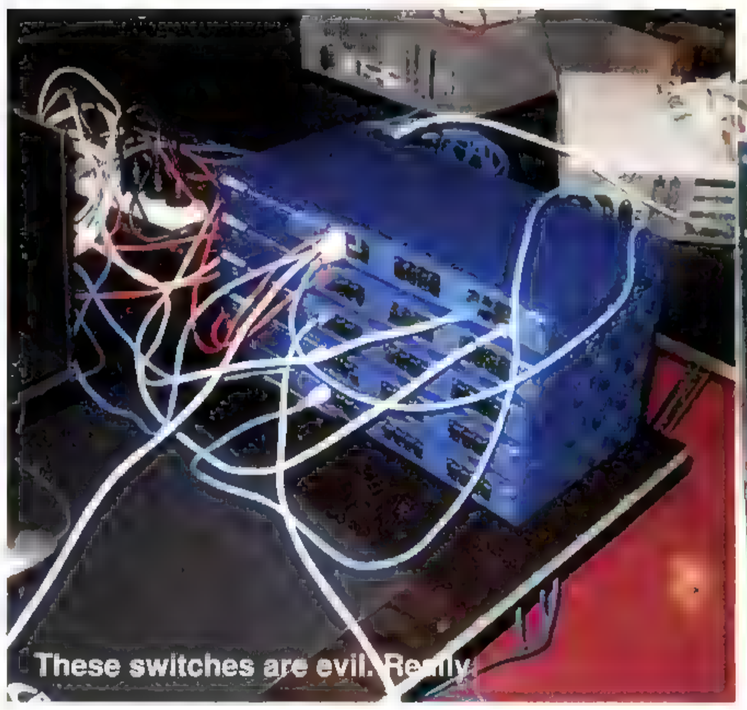
No sheet of linen was left untainted by the touch of smeary red ink.

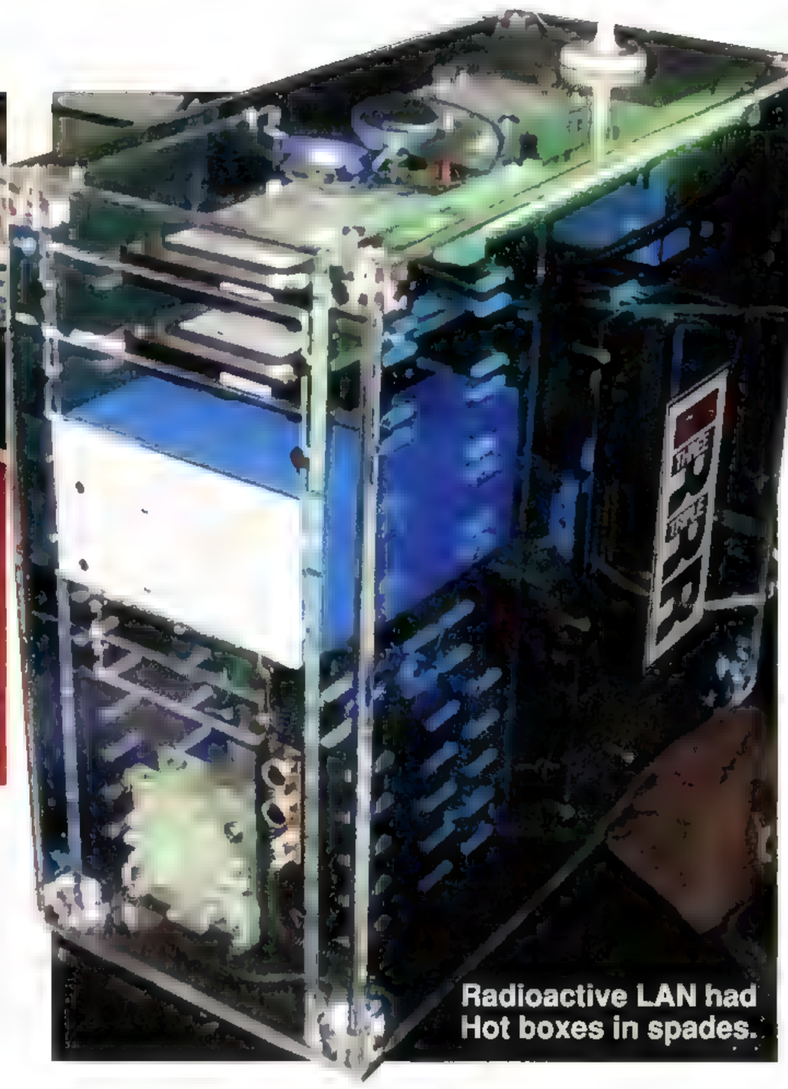
Love was also in the air for sweethearts 1shot1kill and DoshiN. Although the exact words of romance are lost in time, many believe things got rolling when 1shot leaned over, took DoshiN by his womanly shoulder, and lovingly whispered in his quivering ear: 'You know, I've never kissed a man without a moustache before.' Things only got more heated from there, the night climaxing with some heartfelt lip action between a tipsy 1shot and terrified DoshiN. We wish them all the best on their honeymoon.

After recovering – or not – from a hard night on the woozy syrup, it was time for Radioactive LAN, a 48-hour event transpiring from 8 to 9 January. Droves of Atomicans arrived from around Australia to Melbourne's La Trobe University, PCs in hand, ready to download

A meeting of minds. LANers discuss the merits of Coke, pizza and hats.


FrisbeeMark: Everyone's a winner.


These switches are evil. Really.


Radioactive LAN had Hot boxes in spades.

from and play against the cream of Atomica.

In the heat of first day, FrisbeeMark was held, a super-official competition that pits geek against geek in a mighty challenge to propel pieces of hardware as far as they can. The item of the day was optical drives, and by the end of the event, not one was left in working order. Unfortunately, some found the challenge of throwing a one-kilo drive into a box 20 metres away a tricky endeavour and surprisingly, no one managed to get one in. This didn't stop them from trying though and eventually, through some minor rules fudging (read: moving the box closer) a winner was finally declared.

Shortly after lunch on the same day, Atomicans witnessed the good old fashioned larrikin nature of a certain Atomican once more, who after singularly continuing the celebrations of Beer-a-thon into Saturday, flogged a forklift from a construction site on-campus and careened around the university, giving lifts to random Atomicans. Being the sport they are, they returned the forklift to its rightful place, and no one was the wiser.

From then on, it was a full-blown LAN fest until Sunday afternoon, when Radioactive LAN 2005 finally concluded. Games played included Warhammer 40K: Dawn of War, Counter-Strike, Unreal Tournament 2004, Warcraft III, Heroes of Might and Magic, as well as DC++, which turned out to be the most popular. Prizes in the form a RADEON IGP 9100 boards and RADEON 9250 video cards were given to those who performed the best during these gruelling gaming sessions.

Atomic, along with the rest of the community, would like to thank Lambo, Hex and everyone else who helped make Radioactive LAN happen, as well as the super-cool bunch involved with Beer-a-thon – you know who you are! Until next year!

FrisbeeMark was held, a super-official competition that pits geek against geek in a mighty challenge to propel pieces of hardware as far as they can.

Scaling up RSI

Nathan Davis discovers a terrifying new concept: exercise.

Gaming whilst exercising is presently laughable, but one man has set out to change all that -- inventor of the *FPS GameRunner*, Charles Van Noland.

The GameRunner is a treadmill integrated with game controls that can be plugged into either console or PC and is fitted out for some body-building fragging. The treadmill controls the walking pace, whilst everything else is controlled via a bike-like handle. Sounds bizarre for first person shooters, but it's promised to be quite intuitive. From what we understand, the controller of your choice can still be equipped for us keyboard/mouse die-hards.

So far, the reaction from the gaming community has been positive. '. . .the word "sick" is now used by youth, much the way "bad" was a common word for describing something desirable, not too long ago. Mostly the smiles and interest told us what we wanted to know.' says Van Noland. Apparently when in use, you're drawn into the game so much you hardly notice you're using your legs.

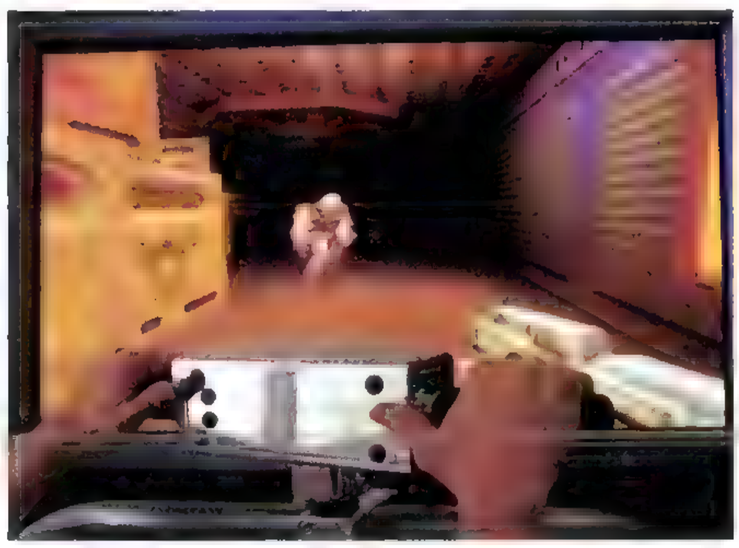
For those looking to drop off the kilos, the current model is listed as supporting up to just under 115KGs. Future models will support weights in excess of 180KGs.

The original idea was conjured up all thanks to a pair of hyperactive legs. Every time Charles saw his son playing games, his legs would be all over the joint (his son's legs, that is), trying to achieve the tasks within the game as if his actual legs were the sole reason for getting to the target. Having gone through several ex-sturdy chairs in which his son's legs could destroy/run on, only one thing could be done. '. . . I needed to somehow integrate a treadmill into a game controller. . .' he recalls.

'The first "prototype" was nothing more than a conveyer/rack/belt. At the time, I thought bi-directional was the way to go. At first, I simply put a mouse directly on it. Through this it was instantly clear that the action needed to be reversed. It was just a curiosity at the time. '

No one else had secured a relevant patent, so the creative juices gushed open and he started thinking more seriously about developing a system.

'The very first complete prototype, (which now sits in our "GameRunner-Smithsonian"), is quite simple, and very functional. It is comprised of a bi-directional treadmill (of my own design, built from scratch) the movement of which is tracked with a wheel and a speedometer cable used to transfer that action to another small belt for a mouse reader, which reverses the action and is held in place by an arm which is also the steering bar with handles above. As archaic as it seems, in some ways, the action is actually quite nice as it translates to the game movements.'



. . . strength, speed and endurance that saves the world from the Aliens!

This was a great start, however it wasn't the perfect platform, involving traction issues.

'We needed more control possibilities, since the few signals we could take from the mouse just weren't enough for most of the complex games available today. We also came to realize that the bi-directional treadmill was neither required, nor safe enough. Without holding on pretty tight it would tend to be slippery.' he mentions.

Soon the final model will be hitting our shores and when it does you can be sure we'll be on it like flies. We reckon it'll be about 30 seconds before we start panting and have to put down the Krispy Kreme doughnuts.

'The new Cyber-Athlete will be a true Champion. After all, it is his strength, speed and endurance that saves the world from the Aliens!'

We like Van Noland's thinking.

Keep on breaking IT news.

And we'll keep making it.

From one innovator to another, IBM congratulates Atomic on its 50th issu

IBM

Tech to come

Daniel Rutter reflects on technology gone by, and what's in store for the future.

It's the fiftieth *Atomic*, but it's not the fiftieth Ground Zero. I got started a tad late, so this is actually the 47th one I've written.

Even nearly-four-years is still quite a while in information technology, though. What's going to happen in the next four?

Well, I'm *not* expecting a huge amount of change in basic hardware capabilities.

When I wrote Ground Zero #1, a 1.33GHz Athlon was the god of all PC CPUs. Today's three-point-whatever gigahertz P4s and two-point-whatever gigahertz Athlon 64s only manage about 3.5 times the performance of a 1.33GHz Athlon, for optimised code. They beat the old Athlon by a factor of 2.5 or less for other tasks. The rate of CPU speed increase has slowed down, and practically plateaued over the last year.

Dual-core processors are just around the corner and ought to give us a reasonable stopgap measure while the chip makers figure out how to ramp up performance in other ways. Don't hold your breath for another growth spurt soon, though. I'm also not expecting a huge improvement in graphics hardware speed. Or, at least, in the impressiveness of what you can do with said hardware.

When I started writing these columns, the GeForce3 was new and exciting. And, like the 1.3GHz Athlon, it still doesn't stink. The current NVIDIA and ATI boards are a bunch of fun, and all, but you can play Half-Life 2 and Doom 3 quite well on an old Athlon/GF3 box. And I'm not alone in preferring Tribes 2 on that machine over Tribes 3 on a brand new god-box.

By 2009, though, those of us on the bleeding edge may at least be able to play a proper hordes-of-monsters Doom game using the Doom 3 engine. Aww, yeah.

So never mind the transistor counts. What genuinely new stuff should we be getting over the next few years? Well, Surface-conduction Electron-emitter Display (SED) computer monitors look as if they'll actually make it to market before *Atomic* issue 100.

I wrote about SED three issues ago; it's already dribbling into the HDTV market, and delivers CRT-level image quality in plasma-screen form factors, but without plasma's huge resolution-limiting pixels and high power consumption.

And then there's micro-projectors – occasionally called 'holographic projectors', but having nothing to do with R2-D2's integrated imaging device. They're just little tiny video projectors, possibly using a standard light-source-and-panel architecture (lit by a giant LED), possibly using scanning lasers (which don't need to be focussed). Red lasers, we've got; compact low power green and blue to complete a colour picture may well be doable in a few years.

However they happen, micro-projectors will let devices like PDAs and mobile phones deliver small-computer-monitor image sizes, provided there isn't too much ambient light. The image quality will be limited by the quality of the surface you're projecting on, but a lot of people would be perfectly happy with a red-only monochrome laser scanner display if it gave even 640 X 480 res and a 15in diagonal.

I further suspect that 'software radio' is going to be huge in the next few years. The term makes people think it's just about replacing your FM tuner, but 'radio' is used generically. Any frequency (or any spread-spectrum range), any signal; all done by a general purpose radio computer that can pull signals right out of untuned RF hash.

Software radio can receive video transmissions, data transmissions, encrypted satellite TV that you're meant to be paying for, four channels of analogue TV or every FM station simultaneously for hard disk recording (hello, HTPC builders!); anything. And you can send too, of course, if you've got a transmitter.

You need an RF front end to feed high frequency signals to a software radio board, but apart from that all you need is appropriate antennas. The boards are just DSP hardware that's already available to enthusiasts for less than a thousand bucks.

New and interesting modulation and demodulation software, legal or not, seems likely to be distributed around the world as fast as the No-CD patch for the latest FPS. Never mind ripping off pay TV; this'll let people invent whole new wireless networking protocols as fast as they like.

When I wrote Ground Zero #1, a 1.33GHz Athlon was the god of all PC CPUs.

Copyright infringers and criminals and international terrorists, oh my; I'm waiting for official pronouncements calling consumer software radio Evil, maybe even Communist, in the near future.

I'm also, however, waiting for cheap generic RX/TX boards from Taiwan, possibly featuring the very finest of faked C-Tick stickers.

Dan knows all, and he can prove it! Email him at **dan@atomicmpc.com.au**

From one community to another

In the beginning, there was a half-empty office in Redfern. Or half-full. In it resided some attractive, and some ugly, people who made a computer magazine known and loved as *PC Authority*. The all-good people who made *PC Authority* magazine had the mainstream covered nicely. The mainstream was happy. But not everyone is mainstream. Just most people.

There was a slice of people into computers, pretty much for the sake of it. Many were gamers, who had learned how to tweak and tune their PCs so games ran well. Or just ran. Others were into the hardware just cos. These people needed a magazine for their intense and wonderful hobby.

It was a hobby as close to science fiction as we could realise. For *Star Wars* kids like me, and I'm assuming, you, computers were irresistible. Ever evolving, computing was about getting faster and more powerful with every step. It was scarily complex, and thus, warded off the mediocrity. Perseverance and understanding had tangible rewards, and bestowed the bonus of elite exclusivity. Not bad as a hook for a hungry tech fan.

Many of these people grew up through the dawn of PCing. Through the 1980s and 90s. Through the birth of PC gaming. Through the decades without the net. Who always built their own machines. Added bits. Researched ways to make what they had better. We hung out at computer shops. Games shops. Some on BBSs, some were students, some worked 'in computers'. Wherever we could feed on new knowledge.

Like you, perhaps, I chewed through local PC mags. Devoured the games reviews, and savoured the tech features and hardware stuff. Which left about half the mag wasted space. I didn't want to know everything, just the cool stuff.

We hung out at computer shops. Games shops. Some on BBSs, some were students, some worked 'in computers'. Wherever we could feed on new knowledge.

Giving myself completely to PC gaming, I found nirvana. Graphics, CPUs, subsystems, components. All tweakable, with the results so satisfying. Talking with shop people and friends gave me the info I needed. Knowing what to get, what sucked. There was nowhere else to turn for the hot juice.

My time making another PC games mag let me share the love, as PC gaming was only partly about the games. Letting myself and many others realise that it's cool to embrace a geeky niche so completely. Like a smackie in Smackland, it engulfed me.

But it still wasn't a full dose of true hardcore performance PC medicine. PC games mags needed to be about games, at least mostly. Tech was still on the periphery. The real fix happened for me and just about everyone else when the net exploded. When sites like Tom's Hardware and Anand took off. Pure unadulterated, opinionated, hardcore silicon sex. A hobby became a religion, and church attendance was healthy and growing.

Still, there was a dullness about those sites. A restrained conservatism. Fresh branches sprouting from an ancient rooted tree. Other sites had passion in spades – and little else, apart from awful design and intolerable grammatical standards. Why couldn't there be a bloody fantastic magazine that was all things good, but done in beautiful style tempered with badarse insanity?

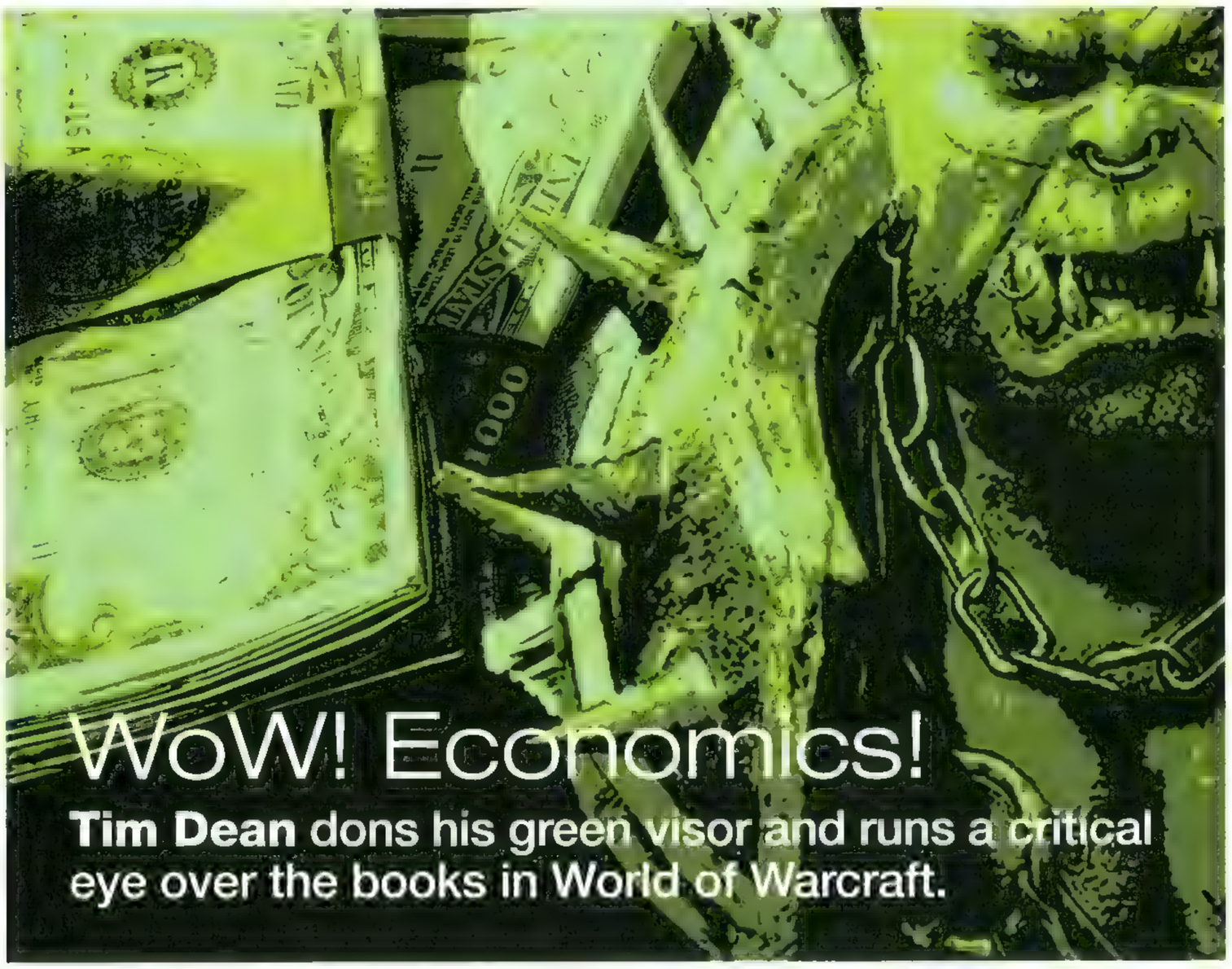
The blokes who started *PC Authority* agreed. They wanted to do a hobbyist mag and call it 'PC Builder'. I knew these good blokes, and we talked, but it was felt that 'PC Builder' was somewhat limp. Soon enough, plans for the tech-equivalent of a Volkswagon service manual were evolved into a space cadet's guide to the cosmos, and the seed became an embryo, and we were away building a team to build our baby!

Not a single professional tech journalist in Australia had what it took, what we wanted for the new team. Tired, boring old lot, they were. They'd never heard of overclocking and thought case mods were funny. So we recruited from the online gaming community. Finding John and Bennett, who knew and loved good tech, and could write about it just how we wanted. That spirit lives on in Logan and Nathan, and is led now by Ashton, who is an original hardcore techgod, and is a crackerjack professional journo too.

In the end, what we loved about tech became *Atomic*. We thrive on tech as much as we do on change. Tech moves fast, and this magazine rides the wild horse, sticking its head out in front boldly, leading a path where other's will tread.

For the love of tech, there is *Atomic*. Thanks for taking the ride with us.

Tell Ben something he doesn't already know!
ben@atomicmpc.com.au



WoW! Economics!

Tim Dean dons his green visor and runs a critical eye over the books in World of Warcraft.

About 50 issues ago, I never thought I'd be sitting here, writing a column on economics. Yet, I feel somehow liberated just by saying that. Sure, I've written on such topics as Zen, Cezanne and cubism, histories of science and the vanishing point in art, that Team Fortress 2 will *never* be released, the possibility that we're all brains in vats, as well as the fact that due to the speed of our nervous system and the length of our arms, we'll never get our ping down below 30ms. But delving into macroeconomics, supply and demand and inflation seems a whole new paradigm in stepping sideways from talking about computers. But, there is a link!

It also feels liberating to say I am totally and utterly addicted to World of Warcraft.

I've played a few MMOs in my time, including Ultima Online when it launched, EverQuest for a spell (no pun intended), as well as Star Wars: Galaxies, before I came to the realisation there was nothing to actually *do* in the latter game. I've had some good times, some dreadful times, and many tedious grinding times that turned me off the concept all together. Until WoW wowed my pants clean off (pun intended).

There are many things, in my opinion, that make WoW far superior to all that came before it (or came at the same time as it). The addictive Diablo-like gameplay, the accessibility, the art direction, the sound and music, the questing system, the interface (and the mods), and the flexibility of gameplay. But it's the economy that has really got me thinking.

While economics exhibits many of the hallmarks of a science, such as the mechanics and maths used, or the formulation of theories that are then tested against empirical observation – in my opinion it's really more like an art. This is because most of science works towards discovering the nature of things that have always existed, or come to exist as a result of predictable natural laws. For example, matter and energy can neither be created nor destroyed, just changed from one state to another. Money (or value, or wealth), on the other hand, can be created from nothing, and can be destroyed back in to nothing. This makes economics a malleable and fickle beast, but one that still follows some broadly predictable lines none the less.

In the real world, we have an ever-changing economy, with myriad forces affecting it every day, and it requires constant attention from individuals, businesses and the government to keep it in balance and to avoid potential economic disasters. And the virtual economy in a MMO is no different in this respect. It would be just as devastating to a MMO world to have an economic crash with rampant hyperinflation as it would in the real world (well, for the virtual characters, at least).

Where a virtual economy is different is that in an MMO there is a god, and that god can change the fundamental nature of the world to make the economy fall in to balance. In the real world it's very difficult to regulate the amount of wealth created or destroyed, and we have to resort to things like artificially manipulating interest rates, taxation or government spending to keep things from tipping out of balance. This is like a top down form of economic management. In an MMO it's the other way around: bottom up. All the developers have to do is change a few variables and they can inject more wealth into the world, or suck more wealth out.

However, there are some economic problems that may inevitably strike even the best managed virtual economy, such as that in WoW. Inflation is the main one, such as that which hit EverQuest not too long ago. Players were using macros to generate massive amounts of money, then selling that off for real money in online auctions. The injection of so much money in to the EverQuest economy brought on hyperinflation, and nearly brought the economy to its knees.

It would be just as devastating to a MMO world to have an economic crash with rampant hyperinflation as it would in the real world.

So far it seems as though the WoW economy is plodding along, with plenty of subtle checks and balances, such as loot drops you cannot sell, high skill training prices, item level restrictions and auction taxes. However, only time will tell if it's going to suffer from inflation problems as more characters get higher in level, and suck more wealth from the world. Almost makes me want to go back to school. Almost.

Got something to share? Tell Tim about it!
tim@atomicmpc.com.au

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Mark Pesce

Stuart Ridley finds out why you should kill your television and join the peercasting revolution.

atomicbio

Name **Mark Pesce**
Websites **www.playfulworld.com**
www.hyperreal.org/~mpesce

Mark Pesce's earliest experience with computers was in the mid-1970s when he got his hands on a PDP-11/45 and played a spacewar game called 'Trek'. Klingons attacked, space bits went flying and Mark kissed the future.

In the early 1990s he started Ono-Sendai Corp to develop a VR system for immersive networked play, then, inspired by William Gibson's *Neuromancer*, co-authored VRML (Virtual Reality Modelling Language), an international standard that brought VR online and now forms part of the MPEG 4 BIFS spec in devices such as Sony's PSX. One of his favourite uses of VRML is the WebEarth project (**www.webearth.org**), which was inspired a decade ago by Neal Stephenson's *Snow Crash* and presents a real-time model of the Earth from space using satellite imagery. He's also helping Australia's Ping group (**www.ping.com.au**) with its new generation model called 3map.

He began a love affair with digital video in 1998 while lecturing in Interactive Media at the Uni of Southern California's School of Cinema-Television (where George Lucas went, a long long time ago) and more recently has become a passionate evangelist for P2P media. Mark is currently employed as Lecturer in Interactive Media at the Australian Film Television and Radio School. He's about to publish a book called *Hyperpeople* that explains how P2P networks seriously threaten mainstream media.

Mainstream media doesn't have its hooks into us like it used to. We might be tired of its formulas, jack of its smugness or pissed off by its shallowness. It doesn't really matter. We have better things to do – like making our own damn media.

Atomic: You've recently become something of an evangelist for P2P media and a concept you've called 'peercasting'. How the hell can we explain peercasting to all of our non-geeky friends?

Mark Pesce: Peercasting allows you to harness the full power of the millions of internet-connected computers to get access to audiovisual media. Rather than having to go to a centralised source – which can get jammed up, or shut down by nasty hackers – peercasting allows you to 'share and share alike' with everyone on the internet.

If someone has a file you want, you get it from them. Though, in the best situations, many people will have the file, and you'll be able to get a little bit from each of them, all *simultaneously*. This means you'll get what you want, and the folks sharing what they have will hardly notice.

It's much, much, much more efficient than any centralised strategy for the distribution of audiovisual media.

Atomic: Why should ALL of us get into it? What's in it for us?

Mark Pesce: Peercasting is turning the entire internet into the equivalent of a gigantic hard drive. You might not have what you want on your hard drive, but out there on the internet, someone almost certainly does.

While that's a bit of a problem for the movie studios, recording companies and television producers, it's most excellent for all of the rest of us, because it means that we can each 'share and share alike' everything that we have created ourselves.

We have access to everyone in the internet-connected world, and they have access to us. I can make a movie and distribute it *globally* at little or no cost, and I can view a movie made by anyone else. All of the channels for the distribution of audiovisual media – movie theatres, television channels, radio and so on – all of them primarily exist to *limit* access to the productions of creative people.

In this power shift, the ability to choose, to filter and spread what we see and hear and like has come to rest in our own hands – not in the hands of a film studio or television network or radio station. That's an enormous thing, and a brand new thing.

Atomic: Some of us might remain observers because we're not sure we have what it takes to participate. What are some of the essential ingredients for a successful new show to be shared online?

Mark Pesce: The psychological distance between observer and participant is collapsing, just as the designations of 'professional' and 'amateur' are collapsing. We'll make things, and share them, or make up lists of what we like, and share those. I can't see anyone being at all involved in this culture of media 'hyperdistribution' maintaining any distance. Everyone is a fan, and everyone is a critic.

As for the one ingredient of success, that's simple: word of mouth. Find the communities of interest in your creations, and use those communities to spread the word. That's already the way it works – consider the office 'water cooler' where everyone discusses what they've watched the evening before – and then apply those rules to the communities and social networks online. It's a fairly simple process, and it worked well for 'Outfoxed'. (**www.outfoxed.org**).

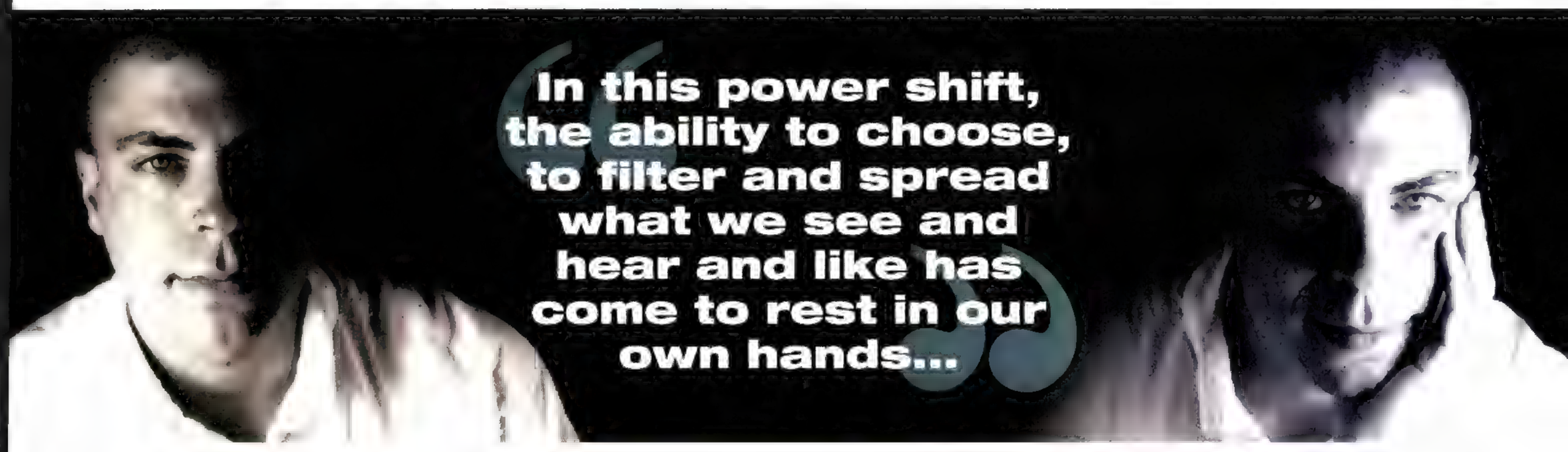
'swarmable', and that certainly helped propel it to success. But, more significantly, in a world where most content is accessible, the message is that quality will out – people will still find quality moments (perhaps even be more likely to find quality moments) in a world of hyperdistribution.

Atomic: OK. So the 'quality moment' comes from the material. You've said the quality of the production isn't so important – if we have good material to carry the show. South Park's a neat example: we saw it in Flash online before it hit our TVs. At the time I didn't know it was some TV thing – I totally thought it WAS a Flash show, just for the net. Anyway, the lo-fi animation looked like most other people's chunky animation in Flash (basic circles etc). Are there other inspiring examples you can think of - favourite shows that have lo-fi/cheap production values but great scripts?

– these aren't useful really beyond giving us pleasure (oh… and some of our parents think an obsessive pursuit of new pleasures is selfish and childish). So in our defence Mark. Why is the pursuit of novelty so important to quality of life?

Mark Pesce: Play is arguably the most human of all activities; it is authentic, not particularly goal-directed, earnest, open, the state in which 'flow' most naturally occurs. I'd say we aren't so much pursuing novelty as engaged in a search for the 'mind of a child' which, with its intent focused, and its ramparts open wide, coincidentally provides the best environment for novel experiences.

Atomic: We're into finding and screwing with the latest tech (opening it up, pulling it apart, modding it etc) – what's the most recent tech you've fallen in love with and have you opened it up yet? Done anything novel to it?



Atomic: Of course. Another great example is one of our favourite shows: 'Red Vs. Blue' (**www.redvsblue.com**) by the Rooster Teeth guys. They've built up a cult around their comedy by making the most of the net (including BitTorrent), but is the medium really the message here?

Mark Pesce: Red vs. Blue proves one thing: quality will out. If it's good, people will gravitate toward it, even 'swarm' to it, if the media is 'swarmable'.

BitTorrent takes advantage of this 'swarm' effect. JibJab, which produced the 'This Land' cartoon – featuring George Bush and John Kerry – had a brief moment of huge popularity, but, because they didn't take advantage of the swarm, their servers overloaded and it cost them a lot of money to distribute their content as widely as they needed.

So, in that sense, the medium is the message. 'Red vs. Blue' is free and

Mark Pesce I am a huge fan of Cartoon Network's 'Adult Swim' programming, particularly the series on Sunday Evenings (this is in the US, mind you) which features barely-rendered animations with hilarious dialog. Some of these programs include:

- The Brak Show
- Sealab 2021
- Harvey Birdman, Attorney at Law (which has been shown on SBS)
- Space Ghost Coast to Coast
- Aqua Teen Hunger Force

They're each short-form (11 minutes) and they're generally quite funny. And weird. And decidedly adult.

Atomic: Atomicans are sometimes given hell by people outside the culture because the things we're obsessed with – modding and playing with tech, gaming, P2P, machinima, crazy arse and often obscene cartoons etc

Mark Pesce: Heh. That's easy: my Sony-Ericcson K700i mobile phone. It's got about as much processing power as any computer I owned up to about 1996 – and it has a Java3D implementation. Sony-Ericcson provides a nice suite of developer tools, and I've been playing with those. It's also gotten me really turned on to the wonders of Bluetooth – which isn't perfect, yet, but is still a really nice way to get bits from point A to point B.

Because my phone has so much RAM (41MB) and the capability to play MP4 video, I've done some interesting things, such as taking the SBS World News – all 30 minutes of it – and compressing it so it fits onto my phone.

That's just a test, but it's a sign of things to come – particularly with the Sony PSP right around the corner. A lot of us are already carrying 'video iPods' around in our pockets, and we don't even know it...

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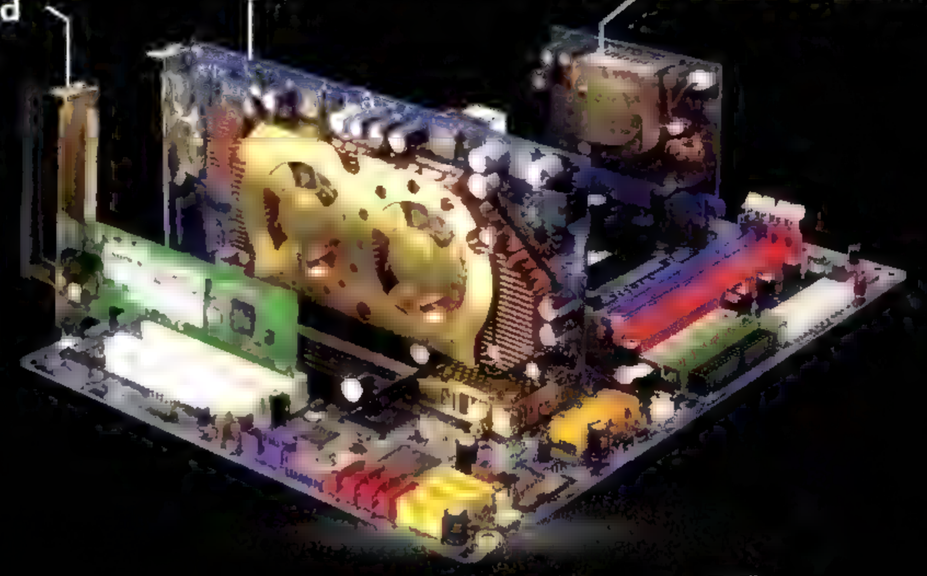
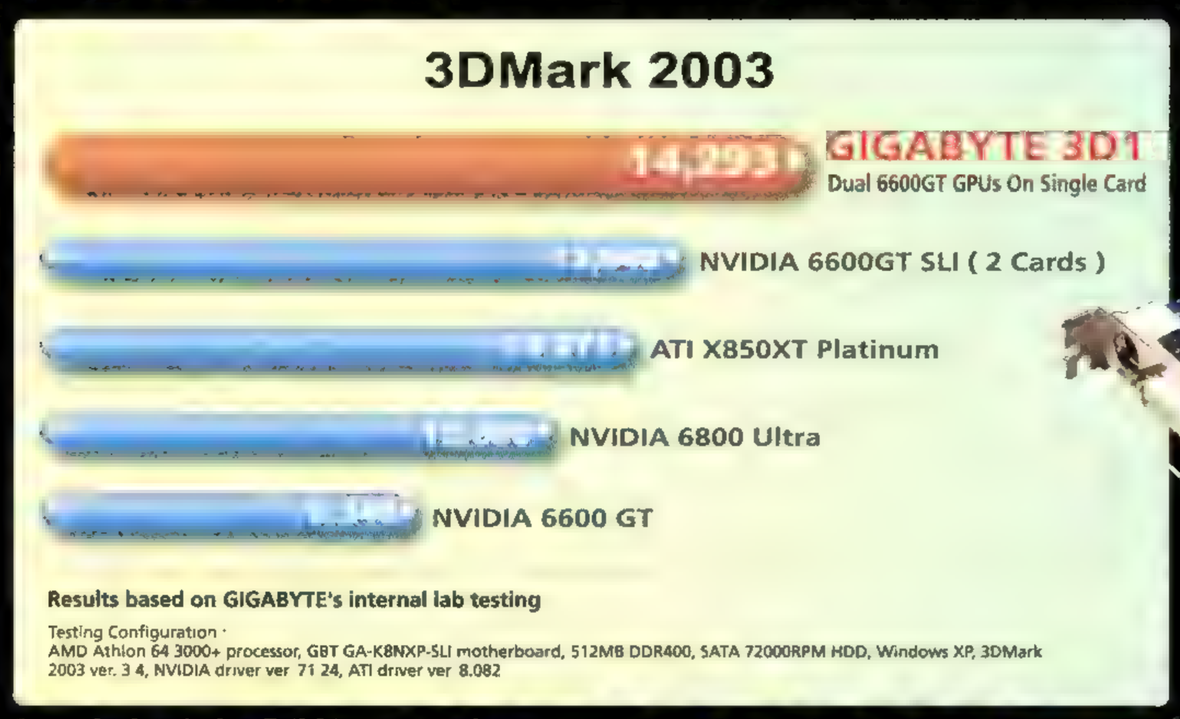


GA-K8NXP-SLI
NVIDIA nForce4 SLI Chipset
8 SIGMA Series Motherboard
Supports Socket 939 Athlon64 FX/Athlon64 processor

GV-3D1 Dual 6600GT Graphics Accelerator



Results based on GIGABYTE's internal lab testing

Testing Configuration :
AMD Athlon 64 3000+ processor, GBT GA-K8NXP-SLI motherboard, 512MB DDR400, SATA 7200RPM HDD, Windows XP, 3DMark 2003 ver. 3 4, NVIDIA driver ver 71 24, ATI driver ver 8.082

NOTE: 3D1 is compatible with the GIGABYTE GA-K8NXP-SLI motherboard ONLY.

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GIGABYTE™ TECHNOLOGY

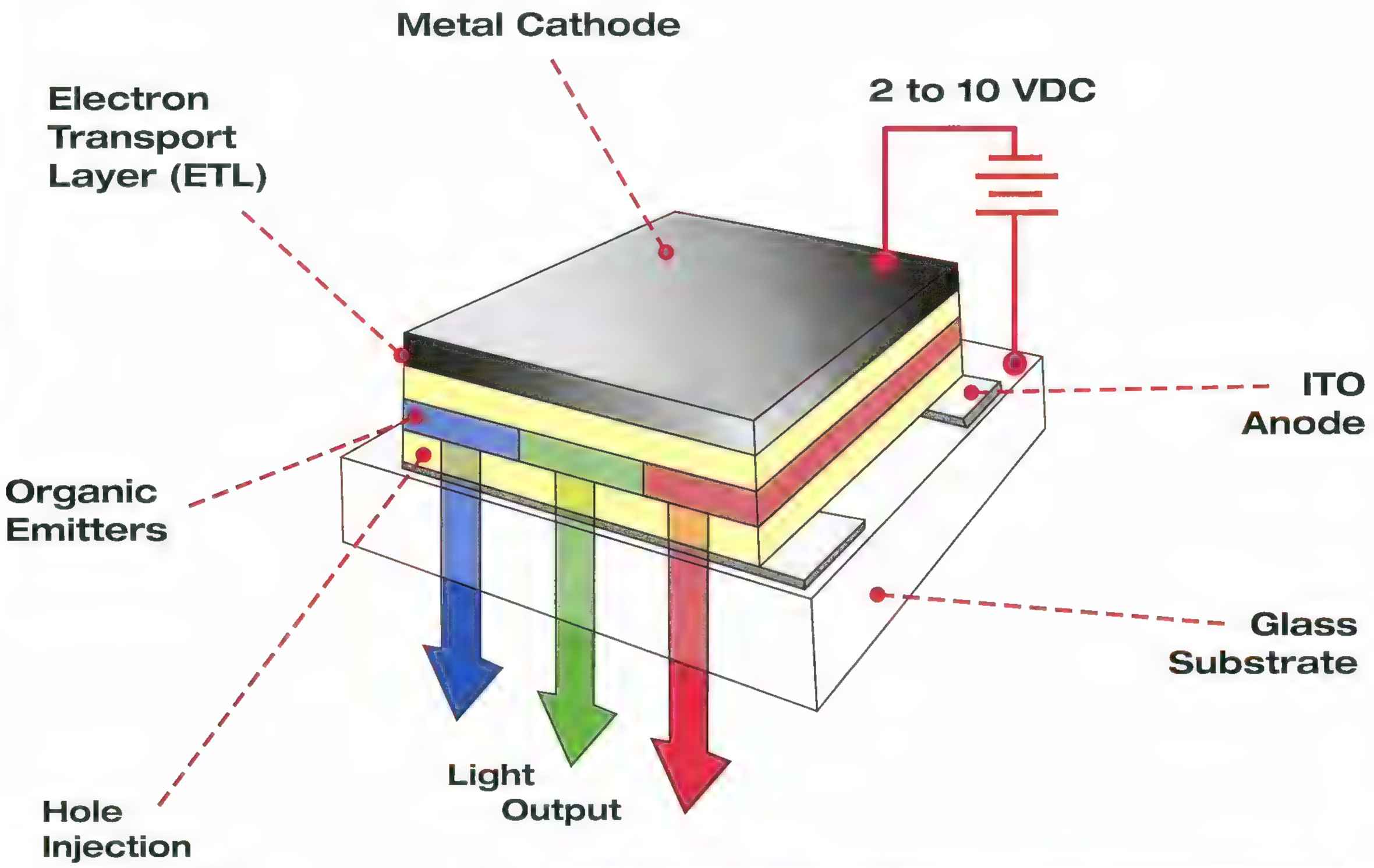
The Active Matrix OLED display

A future of sharper, sexier and stunning digital displays is almost here.

We all love LCD monitors, and while bright and colourful they may be, the best is yet to come. Pioneered by Kodak and Sanyo, OLED (Organic Light Emitting Diode) displays will provide all the benefits of LCD without the limitations – unlike LCDs, OLEDs are self-luminescent and don't require backlighting, polarisers or diffusers. They use less power, generate less heat, allow for thin and flexible displays, and have no restrictions on pixel count or resolution.. They are, for display tech, the next Big Thing. Eventually all sorts of displays from PDAs to monitors to TVs will take advantage of OLED technology, and look all the better for it.

howitworks

Each pixel in an OLED display consists of a stack of thin organic layers sandwiched between a metallic cathode and a transparent anode. The organic layers comprise of an electron-transport layer, hole-transport layer, hole-injection layer, and an emissive layer. When voltage is applied (usually between 2 and 10 volts) to the cathode and anode, the positive and negative charges combine in the emissive layer to produce light in the form of electro-luminescence. As OLED is an emissive device, no display apertures or backlight planes are necessary as with LCD thus providing thinner, flexible, low power displays with a wider viewing angle. Whichever way you look at it (pun intended!) OLEDs are a truly sexy tech.



OLED's are

- High resolution
- Faster than LCD
- Sharper and brigher than LCD
- Use less power
- Paper thin
- Allow flexible displays
- Cheaper to manufacture than LCD
- Arriving in PC displays by 2007

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Just a tribute

Nathan Davis downs a coldie and sheds a shroud of nostalgia.

Whoa, Nelly, we've struck *Issue 50*. I've seen *Atomic*, the community and the industry grow since *Issue 1*, and what a trip it's been. Since hitting the newsstands the industry has moved, and we with it, catering more and more to highly particular technology enthusiasts.

We started with the novelty EL wire, 24x CD burners, four-potentiometer Rheobuses and tutorials on how to solder more speed from your video card. It wasn't enough – we wanted more. So out came the ability to contain Las Vegas in a box, optical drives that burn everything, temperature monitors, memory card readers, programmable LCD displays and how to *build*, from scratch, a home theatre box. Hot damn.

So here we are at *Issue 50*, and we have some sweet new changes in store. With an eye for upgrading, the new Head to Head section is now just that. Gearbox has taken on a sleek new style, and something in particular that's had a significant makeover is Framerate. Not only do we cover the performance of each card, we now detail exactly what you get for your money, and in line with our cutting-edge focus we're only going to be looking at PCI Express cards.

Then there's our new baby, Tech Trends. Turn over the page and you'll find a new column that keeps you in the loop on the latest hardware.

Speaking of hardware, this month we have the intriguing Gigabyte dual-6600GT-cored 3D1 – two video cards in one – that's simply a slice of cleverness (see *page 44*). Sounding this off is ASUS' latest 6800 PCI Express beastie that reveals yet again why NVIDIA is the performance king.

So, here's to another fifty. There's much fun to be had, so hang lose, grab a snack and enjoy the serenity.

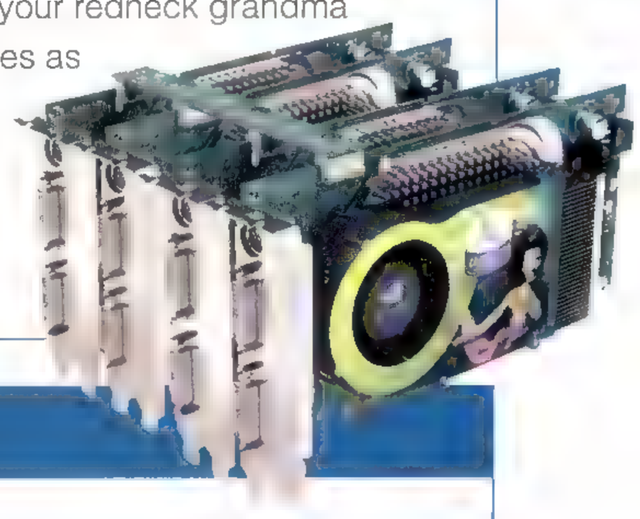
Tell Nathan how big your video card is!
ntd@atomicmpc.com.au

hardcorecontents

oddware

The Quadcunx 4D!

Faster than your redneck grandma and four times as thick! It'll blow your pants and your PC!



howwetest

Atomic Labs uses components that are meticulously chosen to minimise bottlenecks and satisfy our stringent testing procedures. This is relatively dynamic considering the fast-changing marketplace, however we aim for components with the best longevity. All systems use Windows XP Professional SP1 with DirectX 9.0c alongside the latest chipset and video card drivers. All results are averages of multiple runs.

The bench boxes

'Gigantor'
CPU: AMD Athlon 64 3200+
Motherboard: ASUS K8V Deluxe

'Peewee'
CPU: Intel Pentium 4 3.6GHz EE
Motherboard: Intel 925XE reference

Shared gear

Video card: ASUS RADEON 9800XT
Hard drives: 36GB Western Digital 10,000rpm Raptor SATA drives
RAM: Corsair matched dual-channel DDR RAM (DDR 3200 and DDR2)
Power supply: Antec TruePower 550W EPS PSU

The benchmarks

AquaMark3
AquaMark3 proves its worth via its Pixel Performance test that benchmarks how many pixels a card can process.

3DMark05 + 3DMark03
3DMark03 and 3DMark05 remain the defintive comparative standard of synethetic game benchmarking.

FarCry
FarCry is particularly useful for its extensive and stressful use of vertex and pixel shaders.

Doom 3
Doom 3 puts the strain on with its broad use of pixel shaders. Its support for 512MB cards provides forward-looking results.

Tech Trends

With CES keeping the tech fires burning, **John Gillooly** checks out some of the highlights.

In what is usually the slow time of the year, the lack of COMDEX last year has meant that the Consumer Electronics Show in Las Vegas at the start of January was laden with more tech than usual. Most of what was shown looked forward to what we can expect to see over the course of 2005, and painted a very interesting picture indeed.

While Bill Gate's keynote address came and went without the strongly tipped Xbox Next announcement, which now looks like it will happen in March at the Game Developers Conference (the same place that Microsoft unveiled the first Xbox) there were numerous other nuggets of excitement to be found.

NVIDIA is still very quiet about just what its first foray into the Pentium 4 world will take. Unlike the AMD market, the Intel one has some very high standards for NVIDIA to compete against, and with Intel's ICH6 southbridge packing features like HD audio we suspect that the nForce 5 will be a step above the nForce4 for the AMD platform. When it launches it will also bring SLI support to all mainstream desktop platforms.

Intel wasn't sitting back either, with demos running of its Dual Core 'Smithfield' Desktop CPUs running on the upcoming Lakeport chipset. The demo systems were easily handling dual HD video tasks, which is the sort of stuff that brings current PCs to a crawl. This power laden combo is set to reach the market sometime in the back half of 2005.

Intel also finally publicly lifted the lid on Sonoma, the PCI-E enabled update to the Centrino product package for notebooks. After many delays the technology is almost ready for launch, paired with the already released Dothan cored Pentium M CPU.

While only really available in complete systems purchased in the US, ATI's RADEON X850 is now appearing.

Not content to sit back and plug it's RADEON X850 series (which is starting to trickle into the market), ATI was also showing off its PCI-E enabled Pentium 4 chipset, codenamed RS400, which brings a better class of integrated graphics than Intel's 915G to the market, something which NVIDIA has yet to announce. Boards built with these chips should hit the market in a month or two, however after the uninspiring feature set on the AMD version of the chipset we wonder what ATI has up its sleeve to compete with Intel and AMD. Hopefully it goes well beyond the integrated graphics core.

ATI was also demoing its X800 mobile variant, the MRX800, which is set to power the next generation of lap-scalding desktop replacements. Based on the desktop X800 design and with a phenomenal 12 pixel pipelines, the mobile X800 alongside NVIDIA's GeForce Go 6800 that it announced a couple of months back are set to raise the bar for mobile gaming even higher. Both these new chips take advantage of PCI-Express for graphics connectivity.

AMD was pretty quiet, spending most of the time ducking queries about Turion 64, the new mobile CPU it is designing to take on Intel's dominance of the notebook market with Centrino. On the desktop front there was still no change on the expectation of dual core at the end of this year from the number two CPU company.

In other areas of the industry people are still wondering just when we will see VIA's now long delayed KT890 PCI Express chipset for the Athlon 64. Rumours are that it is trying to implement SLI support on the board, but we suspect that this would be severely hampered by (and probably a major reason for) NVIDIA's decision to supply the necessary bridge PCB with nForce4 motherboards rather than supported graphics cards. Hopefully this chipset will emerge in some form soon, if only to impact NVIDIA's continuing dominance of the AMD market.

"Intel wasn't sitting back either, with demos running of its Dual Core 'Smithfield' Desktop CPUs running on the upcoming Lakeport chipset."

The glimpses given at CES show last year for the PCI-E launch marked a turning point in PC technology, but this year is the one where we will finally start seeing the first tangible impacts of the technology. By the time 2006 rolls around there are due to be some fundamental differences to both desktop and mobile computing technology.

VIA's new KT890, and entry into the world of PCI Express capable chipsets.

ASUS DVD Burners enable 16X Burning with 8X Discs

Although DVD burning technology has progressed to 16X, the supply of disc media supporting this new high-speed standard remains low. Even if you are one of the lucky few that is in possession of these expensive discs, you still have to worry about burning reliability unless you want a stack of overpriced coasters.

Optical drive makers, of course, won't let their technological advancements go to waste. Take ASUS for example, the company introduced an innovative feature called "Over-Speed Burning". This feature enables users to enjoy fast 16X burning with 8X discs, which are more readily available and more affordable. It's a cost-effective way to shorten burning time.

Double burning speed on dual-layer disks

Over-Speed Burning also supports double-layer discs, which offer large data capacity up to 8.5GB, roughly 2,000 MP3 songs. Most double-layer discs at the moment support 2.4X speed, meaning to burn a full disc takes approximately 40 to 50 minutes. 4X discs are available as well, but higher speed also comes with higher price. With Over-Speed Burning, you can burn an 8.5GB, 2.4X double-layer disc in only 26 minutes.

Disc quality detection for best burning speed

The advantages of Over-Speed Burning are pretty obvious. The one thing you need to pay special attention to is disc quality. Please make sure you purchase discs approved by the manufacturer of your drive. ASUS implement a mechanism for disc quality detection and intelligently adjust for the most suitable burning speeds to prevent poor quality and damaged discs.

In conclusion, if you know what to look for, enjoying the fastest burning speed doesn't necessarily have to mean emptying your wallet. DVD burners with Over Speed Burning are excellent solutions as the shortage of 16X and 4X dual-layer discs continue and these discs remain expensive.

Double layer burning comparison

Disc media	Burning speed	Burning time	Good	Bad
2.4X	2.4X	40-50 min	· Disc is easily attainable · Affordable	Long burning time
4X	4X	26 min	· Short burning time	Supply is low Very expensive
2.4X	Over Speed at 4X	26 min	· Disc is easily attainable · Affordable · Short burning time	High-quality discs needed

The Choice of Expert Gamers

ASUS Gamer Edition Cards Deliver Big Bang for the Buck

The launch of new titles such as Lineage II and Doom 3 should propel a wave of system upgrades among serious gamers, since more powerful video performance is needed to smoothly run the latest 3D games. Taking into account that many gamers probably don't have huge budgets to enhance their gaming systems, ASUS, a leading provider of graphics solutions, recently introduced special Gamer Edition video cards, which offer explosive graphics at affordable prices.

Improved circuitry and memory modules

Gamer Edition cards, as the name suggests, are specifically tailored towards keen gamers. Gamer Edition cards have redesigned circuit boards, upgraded memory specifications along with other extra features. Compared with solutions supporting the same graphics core, ASUS

Same performance using lower-end graphics core

It takes strong engineering to be able to redesign the reference card. The ASUS V9999 Gamer Edition runs on Nvidia's 6800 chipset, but the card's performance actually approaches those supporting the next-level chipset, the 6800GT.

Gamer Edition cards deliver superior video performance.

For example, the ASUS A9550 Gamer Edition (supporting ATI's Radeon 9550 chipset) provides a 25% performance increase compared with typical Radeon 9550-based graphics cards. And the ASUS V9250 Gamer Edition (supporting Nvidia's FX5200 chipset) is 50% more powerful than other FX5200 solutions.

With higher-end memory, the prices of Gamer Edition cards are slightly higher than solutions using the same graphics core, but enable far better video capability. ASUS Gamer Edition is currently the choice of many gaming experts and users who demand top-of-the-line visual effects. Give a little more and you'll get back so much more.

Cosonic CD-788V Headphones

Supplier Altech Website www.alltech.com.au Price $44

Noise cancelling headphones are great, but they tend to be non-cheap. This circumaural 20Hz-20KHz set is sightly more affordable, however has issues with keeping out the lower frequencies and makes these more obvious by truncating only the higher range. Alas, it's by no means comparable to a high-end noise cancelling set, but it does help by dampening some unwanted ambient aural waves. Overall, a decent pair of 'phones, with the noise cancelling effect allowing for a more solid sound.

The Making of Doom 3

Supplier McGraw-Hill
Website www.seekbooks.com.au
Price $34.95

After the explosion of AAA gaming people have forgotten about the shadowiest game ever, Doom 3. For fans of flashlight juggling this book looks at the various aspects of the games design and even manages to lure Carmack away from breeding and attaining orbit long enough to chat about the challenges faced making so many bits of Martian blackness. It contains no surprises though, and its glossy image heavy nature makes it much more likely to be destined for the coffee table than the bookshelf.

BenQ DW1620 Pro

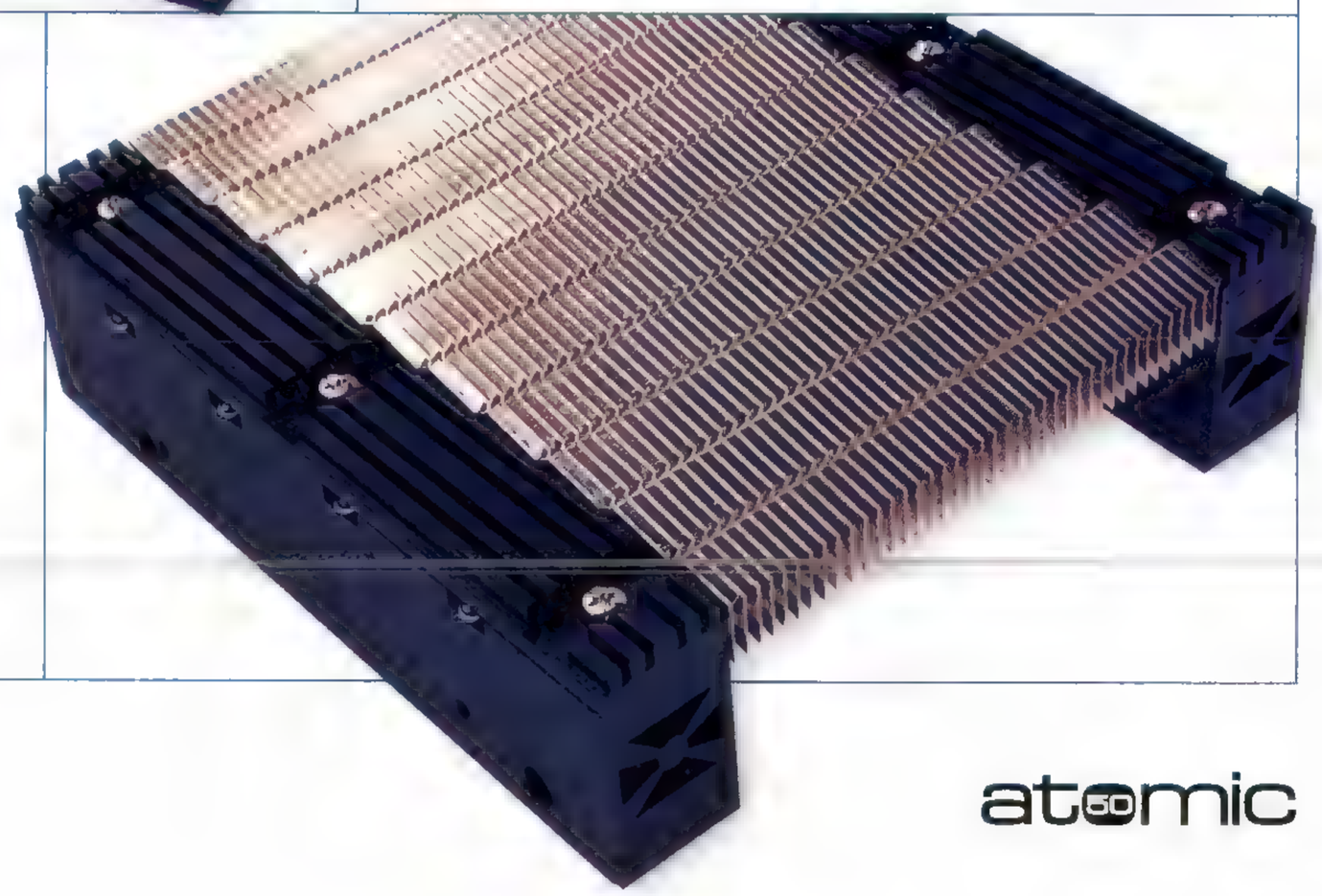
Supplier BenQ Website www.benq.com.au
Price $199

If you're into burning, backing up or just plain have an obsessive insane fetish (lick the disc, touch the disc, lick. . .) for creating optical data discs, you probably like speed boosts. This black-faced beauty is bound to get you leaping for the rainbow. BenQ has a substantial list of 8x media that this drive can reportedly write at 12x or even 16x. Apparently. We couldn't find it. But the fact that such a list exists is totally cool. Just like this feisty drive.

Aerocool HB-101 Hard Beat Series

Supplier XCOM Technology
Website www.xcom.com.au
Price $45

Data is cool. Rather, it should be, but if you're having heat troubles with your feisty hard drive, there is a slight tendency for it to not be so low in the thermal regions. Considering it's hot, and all. This is why you want one of these puppies. Fitting in a 5.25 inch bay, it distributes the HDD heat over a much larger surface area, thus allowing for easier dissipation with the aid of a little air movement, seeing as passive cooling ain't a bucket of peaches.



Steelpad 4S Professional Gaming Mousepad

Supplier Steelpad
Website www.steelpad.com
Price US$49.95

There's a nasty, inherent problem associated with using a cold, metallic surface for a mouse pad. Though damn sweet in theory, it often makes for a wildly loud game of solitaire. By default, there's little difference with this sucker, however they've come up with a clever solution. Included is a natty strip of Teflon tape, ready for mouse-application. Having attached this, the mouse instantly quit yelling to the heavens for. . . cows know what. We prefer the plastic S&S, but it's a surprisingly workable surface for optical meeces.

Aerocool Chameleon

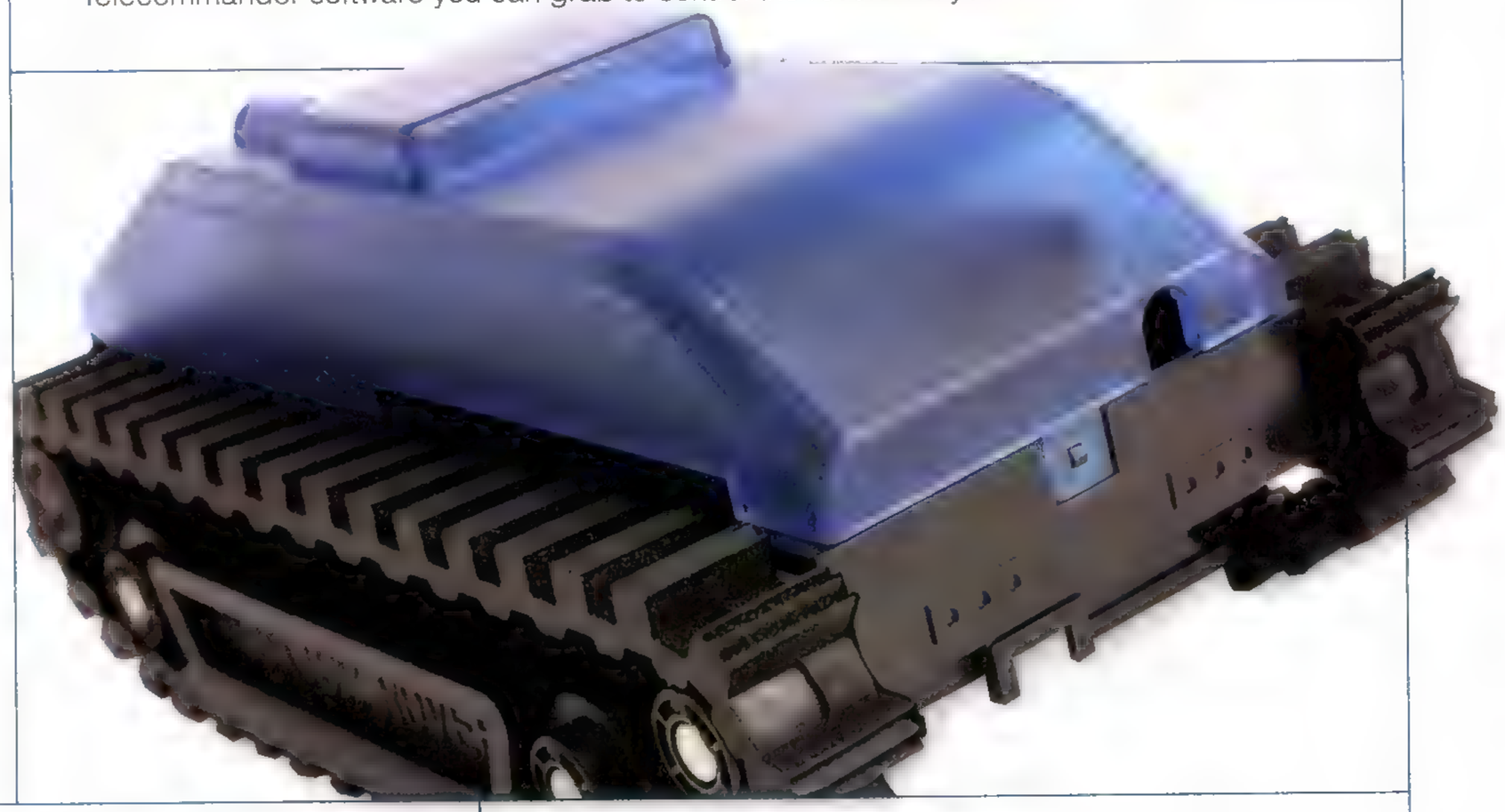
Supplier XCOM Technology
Website www.xcom.com.au
Price $15

As the name might suggest this is a form of reptile. OK, so we lie. It does, however, feature one of a certain unnamed lizard's traits, at least. A very cool characteristic and it involves temperature fluctuations. When the ambient temp in your case – or wherever you mount this 20.3dBA breezy 21.5CF/m fan (ooh, informative dialog) – oscillates, so do the LEDs on the framework. When at the warmer end of the scale, it emits a red and at the other, a blue. Spiffy.

Plantraco Desktop Rover

Supplier CoolPC
Website www.coolpc.com.au
Price: $75

This irresistible RC 'tank' is probably one of the best time wasters a bored office-dweller could own – short of suspending an entire system midair with an array of coat hangers and cable ties. With four separate RF channels running around the 27MHz mark, grab four of these. Using the wonders of infrared, you can battle it out with fellow office tankers, disabling the victim and forcing the owner to drag their arse off their chair to reset it. It just gets better with the optional Telecommander software you can grab to control the rovers via your PC.



Vosonic VP6210 X-Drive Super 40GB

Supplier PC Case Gear
Website www.pccasegear.com.au
Price $498

Expensive, yes. We know, but alcohol isn't cheap either and that doesn't stop people from purchasing the wondrous liquid. This brick of joy packs the ability to cycle through images and play audio and video, outputting 34fps to it's 2in colour LCD display. Perhaps a bit bulky, but hot damn it's good. If you wish to amuse yourself – without drinks – whilst on the go, give this a look. It packs a lot of highly portable goodness.

V-Stream XPERT DTV-DVB-T USB

Supplier Rectron
Website www.rectron.com.au
Price $168

Digital telly is here folks, it rocks and this product is possibly one of the cheapest and easiest ways to gain access to it. At least in theory anyway. It didn't exactly do anything for us in the testing phase, but not through lack of trying. The applications hung in memory for a bit then quit out. There's little doubt it works – or so we've heard, it just didn't like us. Grab this and your computer just might beat your telly to the digital race.

Seagate 5.0GB USB 2.0 Pocket Hard Drive

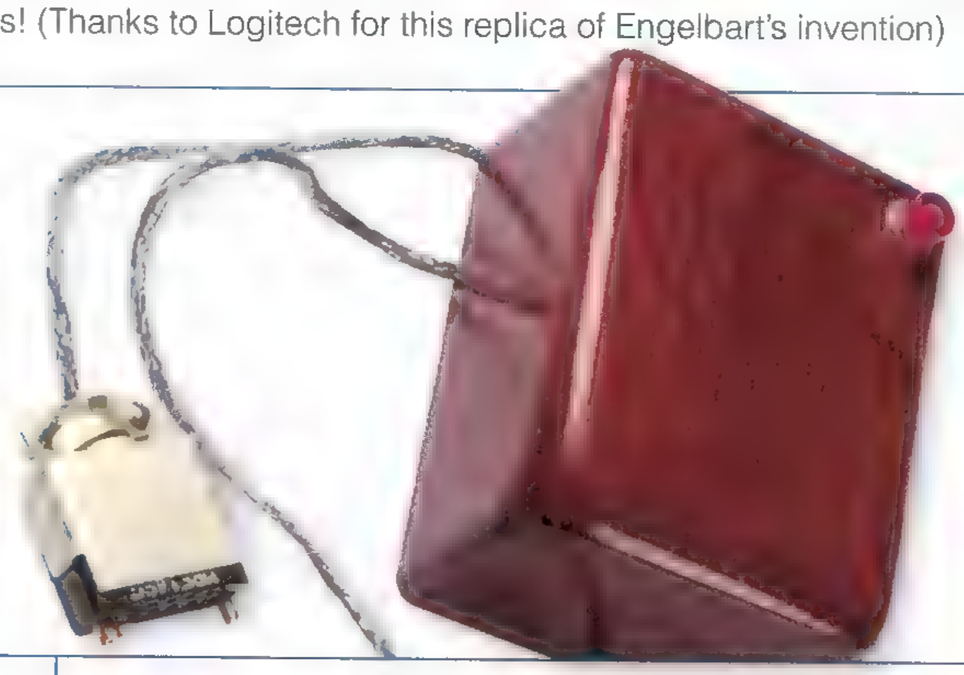
Supplier Seagate
Website www.seagate.com
Price $349

If you're after a decent amount of walkable storage, but not so much as to warrant a really big package for your pocket, check this palm-sized fella out. It has 5GB of storage, which levels out to what you might call 4.65GB (technically this is called GiB, but that's another bundle of beans). It's a natty design with the USB cable disappearing around the unit and ready for USB 2.0 use. Cherry on the icing on the cake – there's no need for a separate power source.

X-Y Position Indicator For A Display System

Supplier Douglas Engelbart, inventor
Website Stanford Research Institute
Price A nickel

Wait, what's this – a new-fangled cutting-edge device that translates hand movements to a display system? What on Earth is one to do with this? Apparently some are calling it a 'mouse'. but it looks like no mouse we've ever seen. When we tried using it, it cut large swathes through our velvet armrests, and despite fiddling we could not get it to work on our mini-computer. Clearly, the idea behind this invention is flawed and we can say whole-heartedly that this is one product that will never take off. Mark our words! (Thanks to Logitech for this replica of Engelbart's invention)



i-Rocks IR-9200 2.5" HDD Enclosure

Supplier Anyware
Website www.anyware.com.au
Price $49.95

One should never underestimate the bandwidth of a portable HDD. And a station wagon filled with mag-tape. With the re-entry to popularity of Sneakernet, it's only natural one might look at grabbing the smaller solution. Not the wagon. More like the lappy HDD, which is what this case uses. Simply open it, slot the HDD in, screw in four screws and you're giggling like a naughty school girl. Being USB 2.0, there's plenty of local bandwidth. Intriguingly, it's powered by a separate USB plug.

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Pentium 4 550 (3.4GHz, 800fsb, 1MB)	430
Pentium 4 560 (3.6GHz, 800fsb, 1MB)	650
AMD Sempron Processors	
Sempron 2400+ (1.67GHz, 333fsb, 256KB)	105
Sempron 2500+ (1.75GHz, 333fsb, 256KB)	120
Sempron 2600+ (1.83Hz, 333fsb, 256KB)	140
Sempron 2800+ (2.1GHz, 333fsb, 256KB)	175
Sempron 3100+ (1.8GHz, 400fsb,256KB)	195
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Athlon64 2800+ (1.8GHz, 512KB)	200
Athlon64 3000+ (2.0GHz, 512KB)	235
Athlon64 3200+ (2.2GHz, 512KB)	300
Athlon64 3400+ (2.4GHz, 512KB)	350
Athlon64 3700+ (2.4GHz, 1MB)	720
AMD Athlon64 Socket939 Processors	
Athlon64 3000+ (1.8GHz, 512KB)	240
Athlon64 3200+ (2.0GHz, 512KB)	315
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Western Digital 160GB 7200rpm 8MB, 3yr Wty	140
Western Digital 200GB 7200rpm 8MB, 3yr Wty	175
Western Digital 250GB 7200rpm 8MB, 3yr Wty	260
Seagate 120GB 7200rpm 8MB, 3yr Wty	135
Seagate 160GB 7200rpm 8MB, 3 yr Wty	145
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Western Digital 80GB 7200rpm 8MB, 3yr Wty	105
Western Digital 120GB 7200rpm 8MB, 3yr Wty	135
Western Digital 160GB 7200rpm 8MB, 3yr Wty	160
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LCD Flat Panel Displays For Gaming	
Samsung 710N 17" (500:1,12ms, 3yr)	520
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CMV 720D 17" (500:1, 8ms, 3yr)	500
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BenQ FP937 19" (500:1, 12ms, 3yr)	660
BenQ FP2091 20" (500:1, 14ms, 3yr)	1580

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SN95G5 nForce3 Athlon64 S939 Barebones	510
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SB95P i925X Pentium 4 LGA775 Barebones	675
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CoolerMaster Cavalier 3 Tower Case w/ 350W	155
CoolerMaster Cavalier 4 Desktop Case w/ 350W	140
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CoolerMaster Praetorian ALU Tower Case no PSU	169
CoolerMaster Stacker Tower Case no PSU	230

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Rate my refresh!

Got fast? You do if your're running at a slippery 8ms. In this month's Head to Head we take a look at the latest batch of super-fast LCD monitors to hit the market.

Welcome to the all new Head to Head section where, each month, we'll run a mini-comparative roundup of the latest gear to help you keep ahead of the upgrade curve.

This month Darren Ellis straps on his hot-pants to test the most cutting-edge 8ms LCD monitors. They're so cutting-edge, in fact, that there are only three in the country at the time of writing. To round out the selection and give them a counter-point to current technology we've thrown in a comparison to a trusty CRT.

How we tested

All the screens were benched by running games and watching DVDs to see how they held up under fast motion and scene changes – LCDs, traditionally, have suffered from ghosting effects which 8ms monitors promise to render negligible. We also tested thoroughly with the industry-standard DisplayMate suite, a specially designed collection of test patterns aimed at bringing out the best and worst in displays of all types and really highlight any failings of a display quickly.

BenQ FP71E+

Price **$699** Supplier **BenQ** Phone **(02) 9714 6800**
Website **www.benq.com.au**
Specifications **17in; 1280 x 1024 native resolution; 300cd/m brightness; 500:1 contrast ratio; 140-degree horizontal viewing angle, 130 vertical; D-Sub, DVI-D inputs; captured power supply.**

BenQ's offering is quite a stylish little number and like the CMV below, it is a 17in display. In fact, it actually performed much the same as the CMV, leading us to believe it may have come from the same factory.

There are differences, though. For starters the FP71E+ could not match the CMV's text display efforts, but when it came to colours and grey scaling the BenQ was either its equal or better. It also has much more graded brightness and contrast controls. Under our gruelling gaming and DVD testing regime the BenQ did exceptionally well. There was some tearing in panning shots in both the DVD movies and games, but it wasn't really that noticeable.

All up it's a great looking monitor and while not as cheap as the CMV it does offer enough to warrant the price tag. We also liked the fact that the FP71E+ also comes with a captured power supply, plus both RGB D-Sub and DVI-D inputs.

CMV CT-720D

Price **$549** Supplier **Impact Systems** Phone **(02) 9621 2999**
Website **www.impactsystems.com.au**
Specifications **17in; 1280 x 1024 native resolution; 450cd/m brightness; 500:1 contrast ratio; 160-degree horizontal viewing angle, 140 vertical; D-Sub, DVI-D inputs.**

Just looking at the CMV CT-720D makes you think Apple – it's all white and funky but lacks that Apple build quality. What the hell though, visually the CMV's got sex appeal.

Unfortunately the looks don't quite match the screen's performance as a few problems became apparent under DisplayMate. These were namely issues with the contrast and brightness settings: they both operated within a very narrow range of the overall 0-to-100 percent of the on-screen display. While a good setting for text, video and gaming are within this narrow band.

We also found that whites tended to over-saturate and bleed, and that a barely perceptible interlace flicker was present and could not be tweaked out.

But it's not all bad news. The colour ranges on the 720D were fantastic, being both bright and vibrant. More importantly it passed our gaming and DVD tests with remarkable aplomb.

Response-able

Where screen size primarily defines the worth of a CRT, a combination of screen size and response times defines the worth of an LCD. How so? CRTs and LCDs draw the image on the screen in a very different manner. A CRT fires electrons from a gun at the inside of a screen's surface, from left-to-right one line at time, moving down the screen. The refresh rate is how many times a second the CRT completes one draw of a pixel, before it draws it again. A screen with a 100Hz refresh rate draws the screen 100 times per second.

An LCD is different, as each pixel is individually controlled and it displays a full screen at once. The response time is how long it takes a black pixel to turn completely white and then fade to black again (or indeed a whole screen of pixels). This sort of change in an LCD pixel usually takes longer than the same pixel in a CRT.

While higher numbers are better for CRTs – refresh rates of at least 75Hz and above are preferred for a solid image – LCDs are different. Here, the lower the number the better. As the nature of LCDs means solid images are par for the course, the refresh rate determines how quickly the screen can be updated. So, while a low refresh rate on a CRT monitor will only result in a headache, for LCDs it's the bee's knees for games and movies.

Samsung

Price: **$1200** Supplier: **Samsung** Phone: **1300 369 600**
Website: **www.samsung.com.au**
Specifications: **19in; 1280 x 1024 native resolution; 300cd/m brightness; 800:1 contrast ratio; 160-degree horizontal/vertical viewing angle; D-Sub input.**

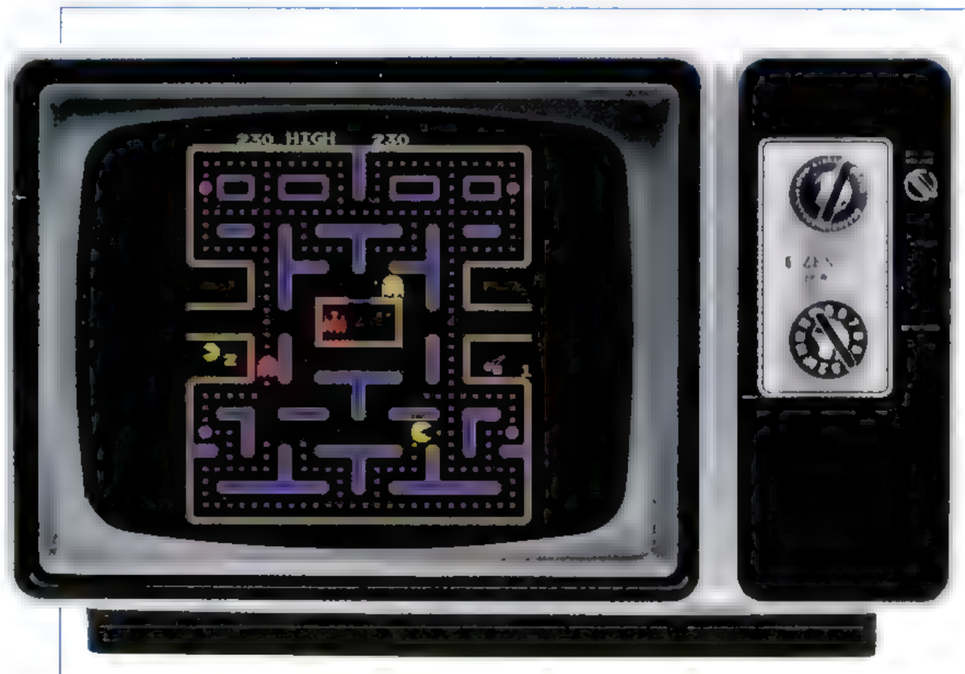
The Samsung 913N is the granddaddy of the three, with 19-inches of pure loving.

However there are a few design drawbacks to this monitor. First and formost for you quality freaks, there's no provision for DVI – it's strictly RGB D-Sub. A Samsung spokesperson told us this is because while a glut of 17in 8ms screens were anticipated, Samsung wanted to be the only vendor supplying a 19in. To keep the cost down DVI had to go. Apparently a DVI version will be coming out, but not for a while.

Regardless, it's an awesome looking screen. The 8ms response time and the generous 19in display size gives a hefty one-two combination to the solar plexus of the 17in screens, but unfortunately its $1200 price tag might leave you similarly gasping for breath. Shop around though and you can find this one selling for much less than the RRP, which lessens the hurt increases the salivation once again.

Under DisplayMate the 913N performed extremely well with the best-looking quality ever. Text display could do with a little sharpening as it blurred ever so slightly but to be honest, we were hunting for problems. The only other area where the display faltered a little was with some motion tearing on panning shots on DVD, but again this really takes the nit-picking too far.

The Samsung 913N was the best-looking LCD monitor tested, and it really is the goods. The lack of DVI hurts some, but with a bit of shopping research to get the unit cheaper, there's absolutely no reason not to buy this display.



Zenith solid state

Naturally, we have to compare the advances of super-fast LCD with the very latest in CRT monitors, pictured left (phwoar!). It may look like a shabby old TV, and that's probably because it is. It's the best we could find, honestly, as everyone here has LCDs. Anyway, to be fair, CRT-based screens are actually still the best for absolutely lag-free smooth motion on screen for games and movies, especially if you're using a solid refresh rate of 100Hz and above, but as discussed LCDs are brighter, sharper, and ultimately sexier.

And while 8ms LCDs come darn close to baby-bottomed perfection, 6ms monitors, when they appear, will trounce CRTs once and for all – but only until OLEDs arrive, of course (see *page 29* of this issue).

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ABIT RX800XT-PCIE

GPU **ATI RADEON X800 XT (R420)**
Memory size **256MB**
Core clock **500MHz**
Effective memory clock **1000MHz**
Memory type **256-bit GDDR3; 2ns BGA**
Pixel pipelines **16** – Vertex shaders **6**
Video in **S-video; composite**
Video out **D-sub; DVI; component; composite; S-video**
Supplier **Altech**
Website **www.alltech.com.au**
Price **$850**

Even on PCI Express, in terms of performance, the X800 XT can't compete with the 6800 Ultra, but it remains a damn good card and ABIT have a balls-and-all package here. It won't steal an extra slot, doesn't have as much heat problems and will definitely keep you going for a good while. With VIVO capabilities and merged with component out, it has the whole shebang.

Leadtek WinFast PX6600 GT TDH

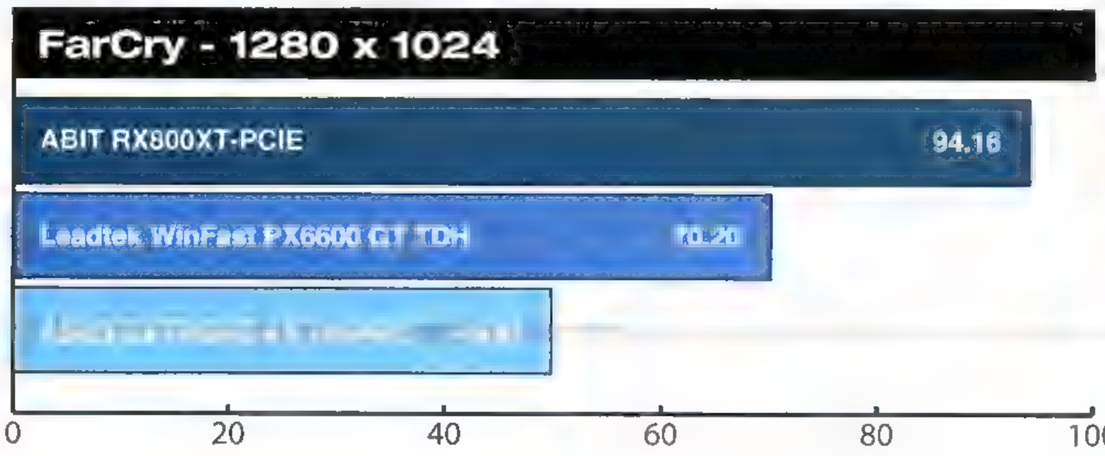
GPU **NVIDIA GeForce 6600GT (NV43)**
Memory size **128MB**
Core clock **550MHz**
Effective memory clock **1120MHz**
Memory type **128-bit GDDR3; 1.6ns BGA**
Pixel pipelines **8** – Vertex shaders **3**
Video out **D-sub; DVI; component; composite; S-video**
Supplier **Rectron**
Website **www.rectron.com.au**
Price **$298.95**

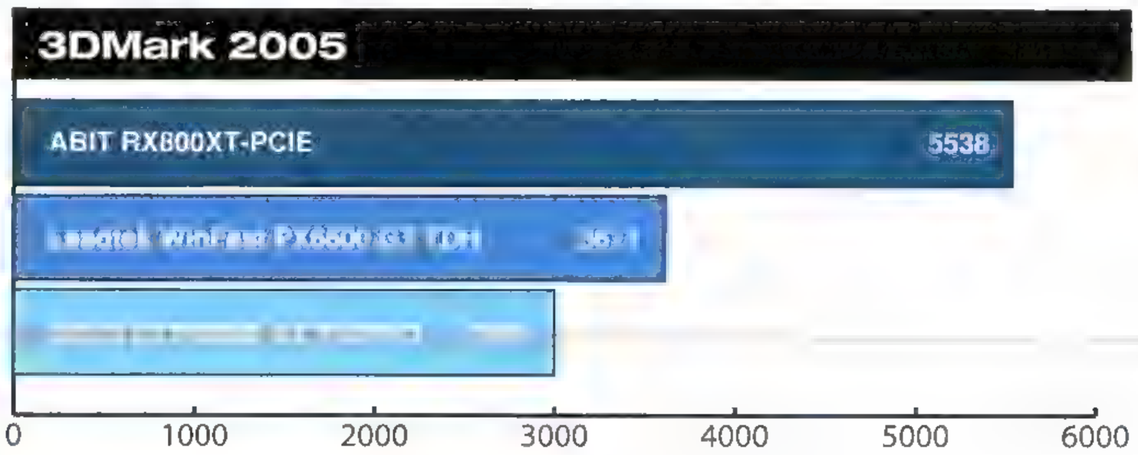
The 6600GTs *are* sex, there's no doubt about it, and this is no different. During testing, it didn't overheat and never used its fans in a way that was beyond acceptable aural pleasure, allowing plenty of leeway for SLI. The memory on this baby is, theoretically at least, capable of running at 1250MHz, sporting four hot little 1.6ns modules. Combine two of these puppies, with the extra overclocking space, and you'll be barking from extreme spooge-factor.

ASUS EXTREME AX 700PRO

GPU **ATI RADEON X700 Pro (R410)**
Memory size **256MB**
Core clock **425MHz**
Effective memory clock **860MHz**
Memory type **128-bit GDDR3; 2ns BGA**
Pixel pipelines **8** – Vertex shaders **6**
Video in **S-video; composite**
Video out **D-sub; DVI; composite; S-video**
Supplier **Achieva**
Website **www.achieva.com.au**
Price **$489**

By no means the fastest card available on PCI-E, we question the use of 256MB of BGA memory – if you're doing something so graphically intense that it requires this much video memory, you wouldn't want this card. This is more so designed for the budget gamer moving on to a PCI-E system or the Home Theatre PC that could do with a smidgen of 3D grunt. The bonus on this one is the memory was made to run at 1000MHz.





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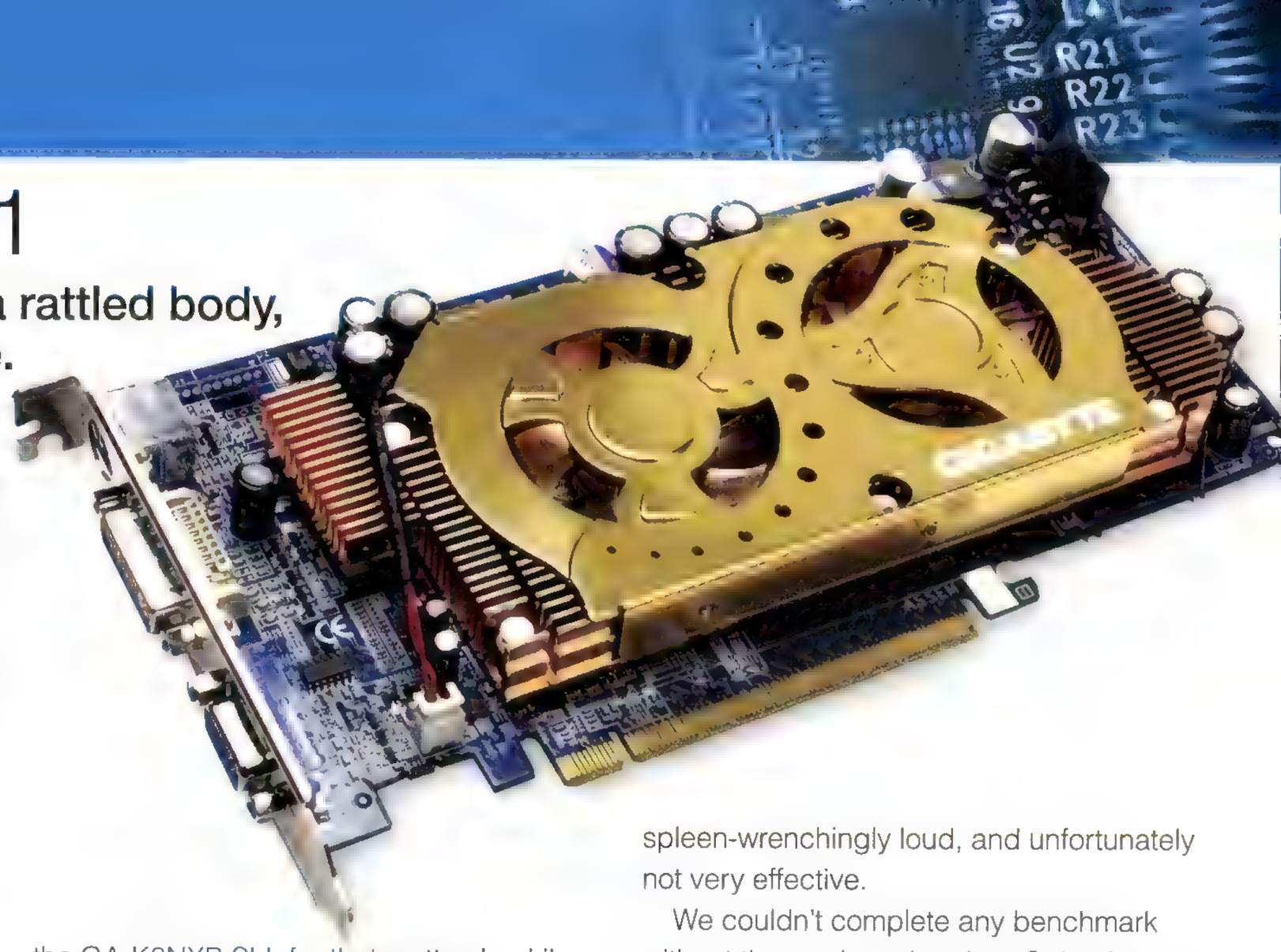
Gigabyte 3D1

With pummelled ears and a rattled body, **Nathan Davis** sees double.



specs

Price **$929**
Supplier **Synnex**
Website **www.synnex.com.au**
Specifications **Two NVIDIA GeForce 6600GT cores in SLI; native 16x PCI Express, 8x per GPU; 500MHz dual cores; 128MB 1.6ns 1120MHz 128-bit GDDR3 memory per GPU; eight pixel pipelines; three vertex shaders; Shader Model 3.0.**

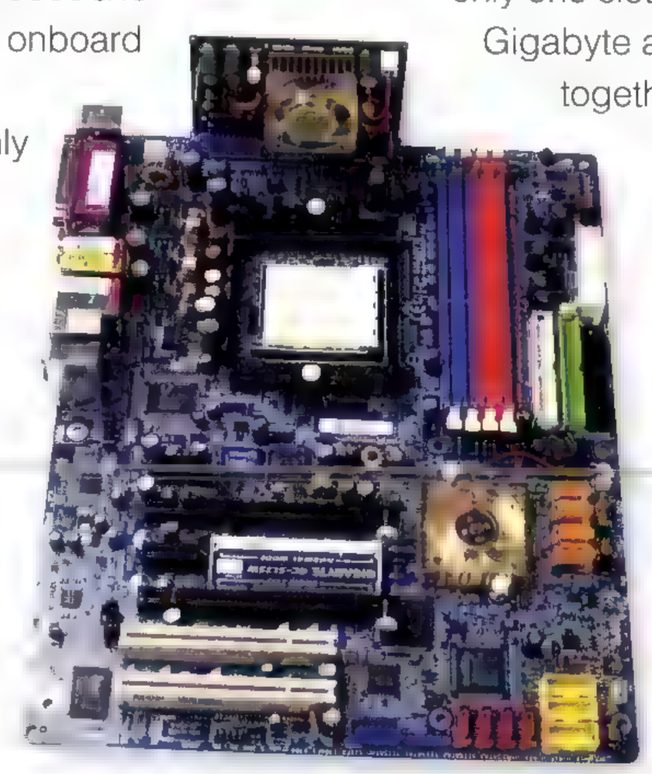
With all the hubbub surrounding SLI, it's only natural that someone create a dual-GPU card. Enter Gigabyte's foray into new the multi-GPU arena. Onboard are two GeForce 6600GT GPUs, both running in parallel (well sort of, we'll get to that). Now, we know what you're thinking and no, you can crash that idea of dropping two of these babies into SLI, as that's just not gonna happen. To digress, a quad-6600GT would be so damn cool, the polar icecaps would completely reform at 0 Kelvin. But even with two, a multi-GPU card is just totally peachy. Now, NVIDIA designed SLI with two separate cards in mind, as there is quite a significant amount of doubling up in data for each card. On a multi-GPU card, the ideal method would be to use a single, shared memory source. Here we basically have two separate 128MB 6600GTs connected together via an onboard form of SLI, all on the one PCB. Not ideal and certainly a lot of on-board wasted memory, but by all means it's a start to future lines of multi-GPU cards.

Unfortunately, the seas get rougher. The first hiccup is the need for a specific motherboard; the GA-K8NXP-SLI, for that matter. Luckily, it is a decent mobo packing pretty much any future proofing that could be thrown at it, but not often does a video card require a specific motherboard in order to operate.

Aside from some necessary BIOS changes, part of the problem is almost squarely out of Gigabyte's hands, as NVIDIA's ForceWare drivers require an SLI capable mobo before it will even try to detect a multi-GPU card. Even if this card could operate in other mobos, this fact alone cancels out pretty much all advantages, as you still require an SLI mobo – even though only one slot will be used. As a result, Gigabyte are packaging these two together. And that's perfectly acceptable.

DOOM 3 - DEMO1	
GeoForce 6600GT	77.7
Gigabyte 3D1	91.1
Average frames per second	

3DMark 2005	
GeoForce 6600GT	3434
Gigabyte 3D1	5957
3DMarks	



Alas, something far more prominent rears its ugly head. Once this system is up and running, the cooling on this card comes up a little short. In a bizarre twist of fate, it is both spleen-wrenchingly loud, and unfortunately not very effective.

We couldn't complete any benchmark without the card overheating. Only after we had banded a 120mm fan to the rear and used the infamous, ear-implosion-inducing Delta Black Label fan on the front did we pull out with the results. Even with the DBL fan, we had to continually move it over the front of the card, as the bombardment of 25°C air rocketing from this noisy beast was barely enough to cool.

That said, once running, the results are impressive. It can certainly push the numbers as you'd expect two 6600GTs in SLI to to be able to do on our Athlon64 3500+ (Newcastle) 512MB of DDR400 RAM system. Unfortunately the mobo didn't come packed with an SLI 'connector', despite it having two 16x PCI-E slots, so we were unable to produce comparable dual 6600GT results in due time.

Overall the card and mobo combo is not too shabby, but whilst on the verge of screaming, the two fans it sports just don't seem to lick enough heat. Obviously having two cores on one PCB is going to be challenging to keep chilly regardless, and perhaps the chunky dual slot-sucking cooling solution found on 6800 Ultras would do the card proud.

All said and done, this is a truly nifty innovation that will hopefully inspire further development on multi-GPU cards in the near future. Kudos to Gigabyte for jumping into the deep end.

score 6.0 OUT OF 10

ASUS EN6800 Ultra

James Wang gets all flustered over ASUS' new dream boat

specs

Price **$999**
Supplier **ASUS**
Website **www.asus.com.tw**
Specifications **NVIDIA GeForce 6800 Ultra; native x16 PCI Express; 425MHz core; 256MB 1100MHz 256-bit GDDR3 memory; sixteen pixel pipelines; six vertex shaders; Shader Model 3.0.**

NVIDIA's 6800 Ultra is one of those chips that come along and lets you do just about anything. Find a game, max out the resolution, put on all the filtering and antialiasing you can muster and it'll happily coast along without a hitch and deliver constant gaming goodness. Such is the case with ASUS' EN6800 Ultra – no benchmark can seemingly hurt it.

Thus far, NVIDIA have relied on its High Speed Interconnect bridge chip to migrate the 6800 Ultra from the AGP 8x bus over to the PCI Express x16 bus. Finally the native PCI-E edition has been unleashed and one of the notable changes is the 6800 Ultra can now shake its booty in SLI. With that in mind, ASUS' incarnation has a substantially measurable heatsink, so if SLI is your forte, be sure there is sufficient space between the x16 slots on your shiny new mobo.

In terms of performance, you'd be hard pressed to find more graphical horsepower in a single slot. Being an Ultra, the core's default clock speed is cranked up to 425MHz with memory operating at 1.1GHz. We used a Pentium 4 3.6GHz Extreme Edition with 512MB of 533MHz DDR2 RAM to let the card fully flex its muscles, and as expected, the results were sensational.

For LCD users, this card will rip through any game at 1280 x 1024. To give you a better idea of how you might exploit the extra horsepower afforded when playing at the breezy 1280 x 1024 LCD resolution (for this card, anything below 1600 x 1200 is a cakewalk), we conducted all tests using 1280 x 1024 with antialiasing and anisotropic filtering enabled.

Another set of tests were conducted at 1600 x 1200 for hardcore CRT users. The Ultra cruised through all of them.

In Doom 3, the Ultra will let you play at 1600 x 1200 at 54.4 FPS. On the LCD side, you can flick on 4x antialiasing and 4x anisotropic filtering and you'll have a very playable 47.2 fps.

Far Cry was smoother still, with the Ultra blowing through the Bunker test at 66.5 fps and the Tree House at 57.5 fps at 1600 x 1200. On an LCD, Bunker plays comfortably at 59.2 fps. Each pixel is faithfully rendered too, thanks to the 4x antialiasing and 4x anisotropic filtering.

In synthetic tests, the results were no less impressive. At 1600 x 1200, it finished 3DMark05 with score of 3692. The same settings underwater were equally effortless, concluding with a tall score of 67,254 from AquaMark3.

Even with all this performance staring us in the face, we couldn't help but overclock the sucker. After pushing the core to the limit, it stabilised at 463MHz. Even with a 9 percent overclock, the performance barely budged. After bumping the memory to 1.21GHz, things started moving. Doom 3 climbed to 63 fps at 1600 x 1200. On the LCD resolution, it hit 50.7 fps with 4x antialiasing and 4x anisotropic filtering.

The ASUS EN6800 Ultra is fast – so fast that games won't be snapping at its heels anytime soon. Now finally in its true, native PCI-E form, and equipped with SLI and the most future-proof shader architecture money can buy, the 6800 Ultra is well suited to the enthusiast. With all the extra goodies in the box such as Doom 3 and even a web cam for ASUS' GameFaceLive, ASUS has one hot package.

hotaward

DOOM 3 - DEMO1	
1280 x 1024, 4xAA, 4xAF	47.2
1600 x 1200	54.4
AVERAGE FRAMES PER SECOND	

FAR CRY		
	1280 x 1024, 4xAA, 4xAF	1600 x 1200
Treehouse	51.0	57.5
Bunker	59.2	66.5
AVERAGE FRAMES PER SECOND		

score **9.0** OUT OF 10

maxtor one touch II

Maxtor OneTouch II external hard drive

specs

Price **$499**
Supplier **Maxtor**
Phone **(02) 9369 3662**
Website **www.maxtor.com.au**
Specifications **300GB external drive; 16MB cache buffer; 7200rpm; 9ms advertised seek time; FireWire and USB 2.0; Retrospect Express backup utility.**

Pr0n. It's what all the cool kiddies are into these days. When they're not leaching movies and whole MP3 albums, of course. But it's all a question of space. All this information has got to go somewhere. Introducing Maxtor's OneTouch II external drive with a bountiful 300GB of movie-listic backup action.

It's an imposing device – it looks a bit like Deep Thought from *Hitchhiker's*, and despite the fact it doesn't have a cooling fan the cold-to-the-touch magnesium alloy dissipates heat effectively.

With a name like 'OneTouch' you'd expect the drive to automatically backup your drives after pressing the Starck-like blue button. In its default configuration it isn't quite so straightforward, and will instead bring up the shipped copy of backup utility Retrospect Express. However, the button can be configured to do whatever you want.

If you're not using your own backup app to back up automatically, Retrospect offers two different options: Comprehensive (in a proprietary archive format) and Duplicate (which, as it suggests, is a straight copy).

We tested the drive using Drivespeed32, and found the unit had a 14.5ms access time, and a maximum speed of 35MB/s. This is slower than your average drive of course, but in its capacity as a backup device it's fine.

The Maxtor OneTouch II is a well-priced external device which will further sharing media files with your mates, and unlike some other plastic drives, is rugged enough to last the distance.

TB

score 8.5 out of 10

orbitouch keyboard

orbiTouch Keyless Keyboard

specs

Price **US$695**
Supplier **Keybowl**
Website **www.keybowl.com**
Specifications **USB/PS2 user input device; weighs 2KG; two directional hat controls for input; right control can act as mouse.**

Considering the most popular keyboard design is based on QWERTY – the key placement of which quite likely involved a bunch of screeching chimps – there's a slight need for improvement. This has previously been met in the form of the 1930s-invented Dvorak layout, however most people aren't willing to jump ship.

If you want a keyboard that's completely out there in terms of meeting the lines of insanity, but not Dvorak, this just might be up your alley. Though it's hardly a keyboard as it has no keys.

Basically two convex panels act as input. We'd describe what they feel like, but we'll let your imagination run wild. Simply place a hand on each and start moving. The patterns produced vaguely represent the associated letters. Such as 'v', which is activated by pulling the controls diagonally toward you. Why would anybody drop their keyboards for this? There is method behind the cheese. This is aimed at reducing the damage done to the fingers and wrist by shifting the RSI movement upstream to the elbows. Getting around these combinations is a real head-screw. Realistically, it's comparable to learning the keyboard all over again.Once mastered the typing rate apparently roofs out at around 40wpm, so it's certainly not for the speed typist.

Gaming is completely out of the question of course, but then if your RSI is so bad that you need one of these gaming probably isn't on your radar.

Overall the orbiTouch Keyless Keyboard is an acquired taste but handy if your wrists need a rest. The price could a problem though, it's clearly not for the faint of wallet. Still, if ergonomic devices float your input methods, it's worth checking out.

ND

score 7.5 out of 10

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LiteOn products features innovative technologies unmatched by competitive products, including SMART BURN Monitoring & Adapting Recording Technology for Burning | Smart-X Smart Monitoring & Adjusted Read-speed Technology for extraction | Vas Vibration Absorber system. The new series of LiteOn DVD re-writers offer fastest CD & DVD re-writer speeds available on the market, and with superior price performance to match. LiteOn is the number one choice for all your Optical needs.

DVD Burner - Double Layer (16x)

Model *(internal)*	SOHW-1613S (single layer)		SOHW-1673S (double layer)	
DVD Family	DVD ± RW		DVD ± RW	
Type	[+]	[-]	[+]	[-]
Write	16x	8x	16x	16x
Rewrite	4x	4x	8x	6x
Read	16x	16x	16x	16x
CD Family	CD-RW			
Write	48x			
Rewrite	24x			
Read	48x			
Data Buffer Memory	2MB			
Support Media	DVD: DVD single layer (PTP/OTP), DVD-R, DVD+R, DVD-RW, DVD+RW | CD: All CD-ROM/R/RW formats		DVD: DVD single/dual layer (PTP/OTP), DVD-R, DVD+R, 4x Double Layer DVD+R9, DVD-RW, DVD+RW | CD: All CD-ROM/R/RW formats	

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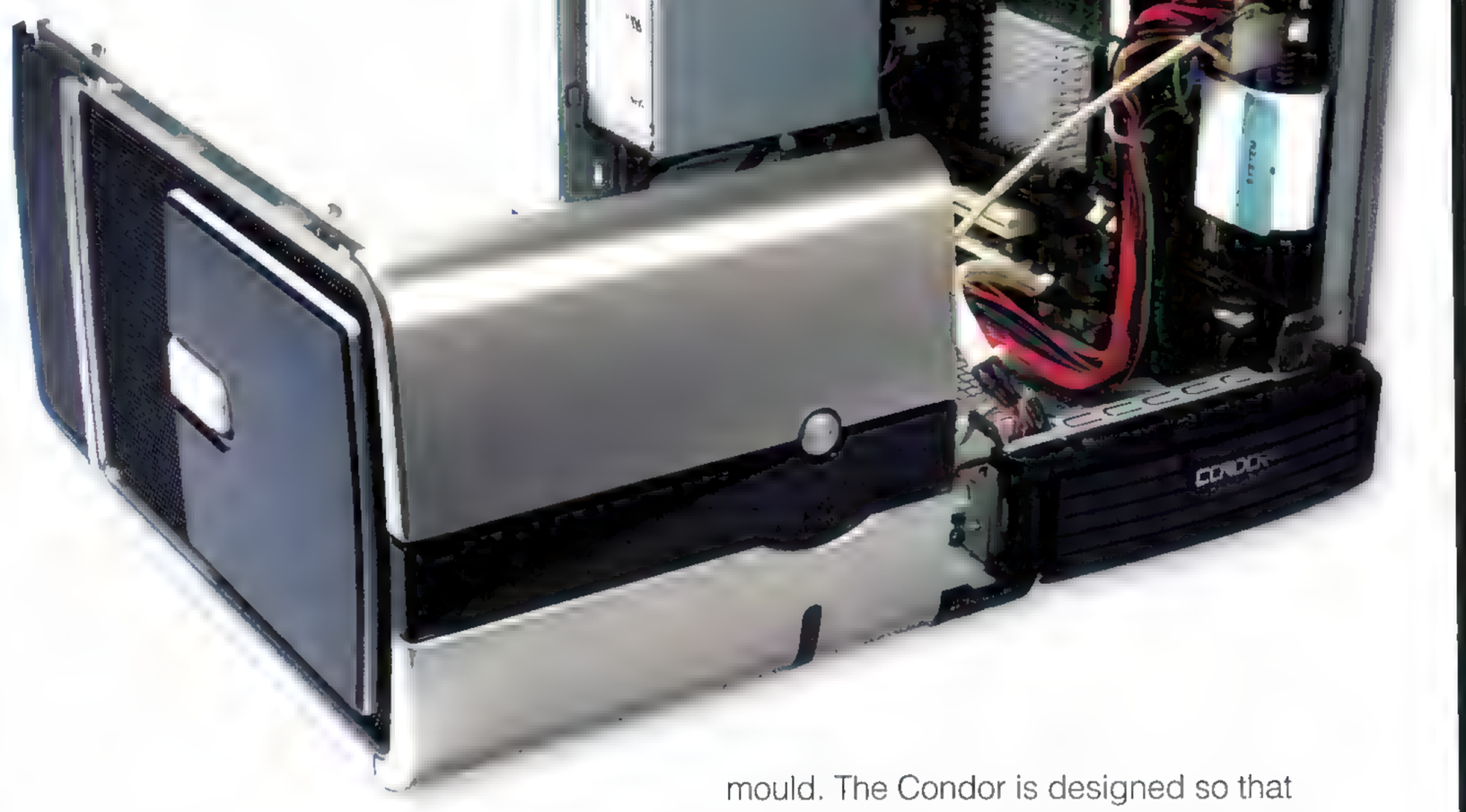
fic condor

FIC Condor

Cuisine expert **Ty Pendlebury** discovers the Chilled Toaster Factor.

specs

Price **$429**
Supplier **KingMax Technology**
Website **www.kingmax.com.au**
Specifications **Intel 865G chipset; 256MB DDR400 RAM; 2x DDR400 slots; Intel® Extreme Graphics 2; 200W PSU; 2 x SATA slots; 2x PCI; AGP 8x; 5.25in bay; 2x 3.5in bays; SD/MS/MMC card reader; AC'97 sound; 10/100 LAN; 6x USB; SPIDF-out; wireless keyboard and mouse; Counter-Strike: CZ; CyberLink PowerCinema.**



Lugging gear to the local LAN party is never fun, but the evolution of the SFF has helped eliminate some of the bulk. But most SFFs are hard to work on, and don't really scream out 'kick-arse'. So it is, then, that FIC's Condor emerges as fresh as a jug full of fjords.

Not only is it mean looking, and with a minimum of crass LED-age, but it's one of the easiest cases to work on. Ever. The white button on top is the key to this little marvel. Pull it forwards and the case easily yawns open. The hinged case system is a concept Mac users would be familiar with, as it was used with Apple's G3 and G4, but is rarely seen in PC desktops. The hinges themselves are also removable for easier construction.

Internally, drive bays are placed in fairly logical ways, as are the power cables and the pre-installed IDE cables that feed them. The single optical drive sits on the bottom when the case is open – and operates vertically when upright. There is also space above for two HDDs or a HDD and a floppy via the external drive-bay. The case is an advertised 90% tool-less, but it's hard to see where you could use tools anyway. Nevertheless, the Condor makes accessing and upgrading a quick and relatively painless procedure. There is also plenty of internal bracing making the two case halves fairly rigid: they won't flop around like wet sandwiches when you open the case up.

The Condor is based on the reliable 865G ATX chipset. Onboard, there is space for two PCI cards – where many SFFs only offer one – and the obligatory AGP 8x slot.

There is also onboard graphics if you want to use this as a media box, albeit *extremely* underpowered. Ins and outs are also covered, with 6 USB slots, SPDIF out, 100Mb/s LAN and a 56k modem. There are also two memory slots; hardly ball gripping, but fairly standard for systems this size. The included mouse/keyboard, CS: CZ, and a bonus 256MB RAM are certainly a nice sweetener.

One of the disadvantages of this unit is its use of a fairly weak power supply – only 200W. Cards such as NVIDIA's 6800 Ultra stipulate a 350W PSU as minimum and so this is probably not the best choice for a hardcore gaming rig. Upgrading the PSU could also prove difficult as it's of a non-standard size – prime time to whip out that Dremel and nullify some warranties.

Thermally, this device breaks from the 'cold air in front, hot air out back' mould. The Condor is designed so that cool air is drawn from the bottom of the unit, through the CPU, and blown upwards through a vent in the top. This helps to keep things fairly chilly in comparison to many other SFF boxes.

The Condor comes in two flavours – a barebones as we see here, or kitted out with drives, a gig of RAM and a RADEON X800 Pro. For hardcore system builders and gamers, the barebones offers better flexibility and cost-effectiveness.

FIC has fired its warning shots across Shuttle's bows. It has demonstrated that SFFs no longer need to be compromised desktop systems. They need neither be cramped nor thermally challenged. The only gripe is the lack of sufficient power, but anyone after a toaster-sized gaming rig with some nifty design features will find there is much to enjoy here.

score 8.0 OUT OF 10

Leadtek GeForce 6200

specs

Price: **$110**
Supplier: **Rectron**
Website **www.rectron.com.au**
Specifications
NVIDIA GeForce 6200 64MB TurboCache; 350MHz core; 64MB 700MHz 32-bit DDR memory; four pixel pipelines.

Green is now the rarest colour of all graphics cards, which is funny, considering it was the *only* colour you could find PCBs in five years ago. If green isn't funky enough for you, then the fact that this card has no fan should prove to be even more bizarre. Green and totally passive, this card pretends to be nothing in a world of black, blue and pink graphics cards with fancy cooling to match. Its performance, however, is no slouch.

This board has 64MB of memory, but thanks to NVIDIA's new TurboCache, it can render directly into system memory and make up much of what it's missing. As it can do this in parallel with its own memory, it also gets a healthy bandwidth boost.

The DirectX 9.0 results were barely passable but that's to be expected at this level. In 3DMark05 it managed 1145 points. Granted, it's not exactly worth bragging about, but hey – when was the last time a low-end card actually ran the latest 3DMark?

It ran Doom 3 too, though with a struggle. At 1024 x 768 with shadows, bump-mapping and the rest turned on, it pushed 16 FPS. Running tests in Far Cry produced similar results. Dropping details and resolutions produced a more playable experience.

If you intend to connect your PC to a high-definition TV, this card may just be for you. With component and S-Video connectors at its disposal, it'll output razor sharp pictures at the highest resolutions. And with PureVideo as a standard feature, the card will push pixels as fast as your TV can draw them.

JW

score 7.0 out of 10

TV-B-Gone

specs

Price **$US14.99 plus $9.95 shipping to Australia (approx. $32).**
Supplier **Cornfield Electronics**
Website **www.tvbgobe.com**
Specifications **Key-ring attachment; IR; single button.**

The TV-B-Gone is the greatest invention since battery-operated sliced bread. It's a simple, glorious plastic device with one button and one function: it turns off any TV, anywhere.

I'm sure that at some time you've been in a public space and was beset by a blaring TV, so loud, that it made conversation and even thinking difficult. These intrusive TVs are just about wherever people congregate. It's an annoyance that we put up with because it's the social cost we're forced to pay for waiting on a train platform, or walking through a supermarket. Until the TV-B-Gone we just had to put up with it, but not any longer.

hotaward

With just the one press the TV-B-Gone cycles through over 200 manufacturer's TV shut down commands in just over a minute, and the odds are that the annoying TV set nearby will turn off. In the first week of my TV-B-Gone ownership we have bested in combat the TV at the local kebab shop, six too-loud sets at a pub, the racket coming from a TV at a train platform, and the true Atomic test of the unit: the 30-odd TV array at Myers during the annual stocktake sale (a third of the displayed sets turned dark). It would have been more but unfortunately the TV-B-Gone is directional and it was hard to cover the whole array.

Like the One Ring the TV-B-Gone calls from your pocket with temptations of gross irresponsibility and power among the worlds of men, but fortunately the TV-B-Gone isn't just an instrument of pure evil though – a shut-down command to a TV that's already off is a turn-on command, so the sets can be brought back to life again.

If you want to, that is.

DE

score 9.0 out of 10

Leadtek

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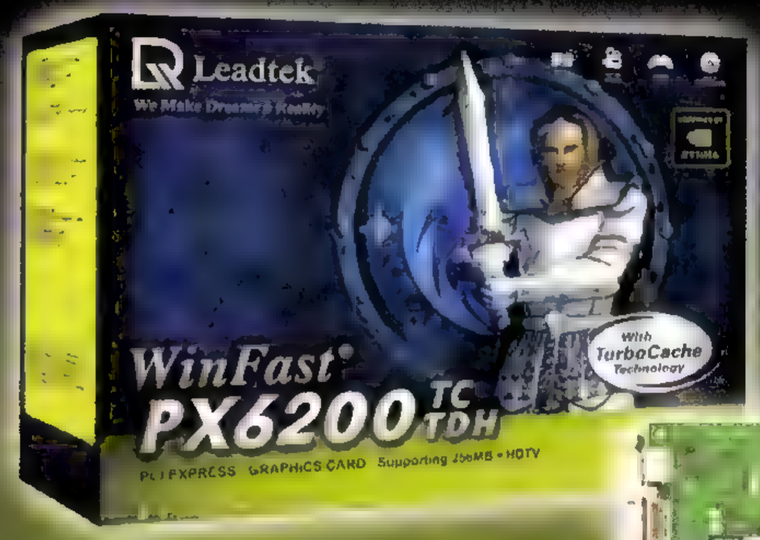
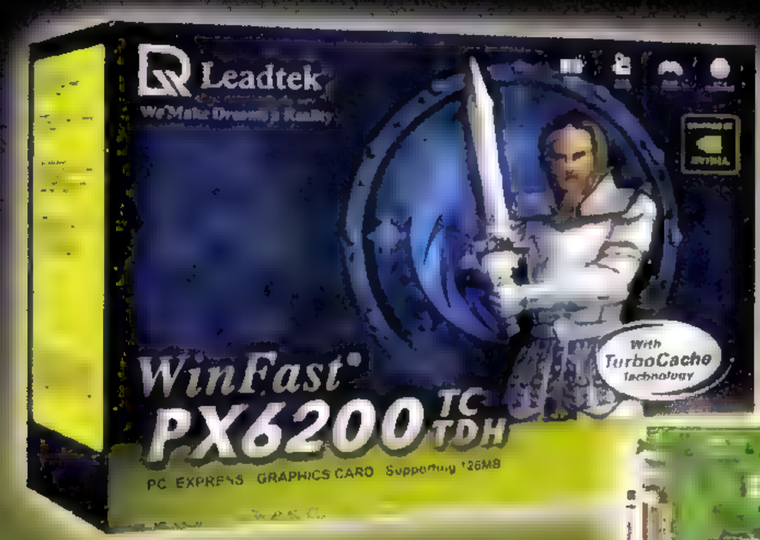
nVIDIA. GeForce 6200 With TurboCache Technology



WinFast PX6200 TC TDH

Direct 9.0c Shader Model 3.0
UltraShadow II
Consumer Electronics Video
NVIDIA PureVideo® technology
OpenGL 1.5 Optimizations and Support
DVI VGA HDTV Output

Supporting 256 MB



WinFast PX6200 TC TDH

Direct 9.0c Shader Model 3.0
UltraShadow II
Consumer Electronics Video
NVIDIA PureVideo® technology
OpenGL 1.5 Optimizations and Support
DVI VGA HDTV Output

Supporting 128 MB

www.leadtek.com.tw

GlacialTech Limba 2000

Specs

Price **$66**
Supplier **Altech**
Website **www.altech.com.au**
Specifications **Socket A/370 aluminium heatsink; two 1900rpm single ball bearing 80mm intake fans; two central heatpipes; 780g weight.**

Simplistic in design, this mega heatsink/fan setup aims to cool Socket A CPUs silently. More specifically, to cool overclocked CPUs. Aluminium in construction, this 780g heatsink has two slightly-angled 80mm intake fans on either side with two heatpipes running up the middle to dissipate the heat more evenly over the fins protruding out.

Installation was a piece of pie, with a simple retention clip to grip either side of the CPU mount. We would have liked it a little tighter for better contact with the processor. But this is the inherent design issue that accompanies ease-of-use retention clips, as it has no fine-tuning adjustment. As mentioned earlier, this is a simplistic design.

Without much further fiddling, we slapped on some goop, dusted off Chernobyl and fired her up at 80 watts, having clipped on the heatsink. With only one fan speed – about 1900rpm per fan – as much as it wants to grab your eyeballs and switch them around, this is one damn quiet setup. No audible squeaking or the like, just a quietly pure and wholesome 'purr'. In an ambient 26°C it settled down at 64°C. The claim of 'best silent solution for the overclocker' depends on your ears, but it is by all means an active alternative to passive cooling.

Overall, this would fit on a low-end system after a good silencing, albeit with more heat than any other audible Socket A cooler.

As a silent solution, this pricey sink would be at home in a Home Theatre box.

ND

score 6.5 OUT OF 10

Scythe Samurai CPU Cooler

Specs

Price **$49.95**
Supplier **PC Case Gear**
Website **www.pccasegear.com.au**
Specifications **Socket 478/A/940/754 all-copper heatsink; speed controlled double ball bearing 80mm fan; fan range from 1300rpm to 3400rpm; ~600g weight.**

Luckily for you, but perhaps less so for the previous cooler, we have discovered this otherwise ordinary looking all-copper heatsink. This is by far one of the lighter all-copper heatsinks we've looked at. Depending on the attachment, the overall weight of the heatsink is 600grams, give or take a few. So far off to a good start.

One might expect the fan to suck air into the heatsink and blow it out the sides, but instead it sucks air through the fins and the hot air is exhausted directly out by the fan.

This was a great decision, as you'll see.

We were also impressed with the way the heatsink attaches to CPU mounts. The bracket slides onto the unit, the heatsink is put into position and the bracket is then screwed into place, making for the tightest fit possible.

Getting down to the crux of it, in an ambient 26°C, we whacked Samurai onto Chernobyl, dialled her up to 80watts and watched with monkey glee. Spinning at 3400rpm, not only was it barely audible, but produced a bogglingly low temperature – 47°C. We slowed her down to 1300rpm with the supplied potentiometer. Even if you placed your ear *on* the fan, you wouldn't hear this, but your CPU would certainly know, as it hit 64°C. Nasty, but there's hardly need for this slow down, considering the original lack of noise. Having flipped the fan up so it blew, the temperature rose by a few degrees. Not sure how 'Samurai' was coined, as it's more of a silent Ninja, but Scythe have blown us away. The only bad thing is that it doesn't, by default, support Socket T or 939.

All up these guys clearly know cooling, and for that they earn our respect.

ND

hotaward

score 9.5 OUT OF 10

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Chaos has erupted throughout the galaxy. As leader of an elite squad of Republic Commandos, your mission is to infiltrate, dominate, and ultimately, annihilate the enemy. Your squad will follow your orders and your lead, working together as a team - instinctively, intelligently, instantly. You are their leader. They are your weapon.

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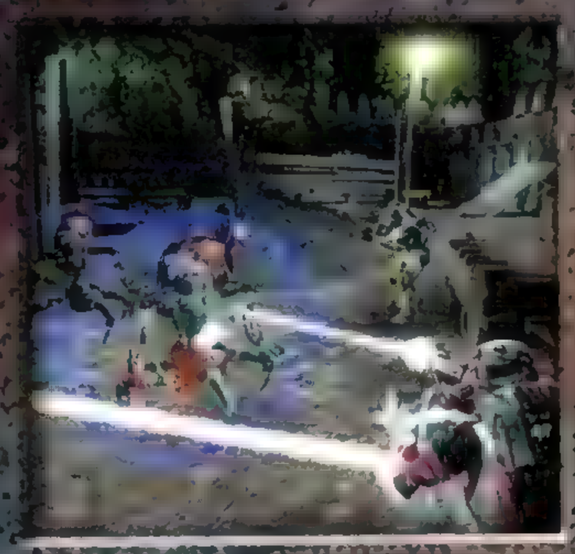

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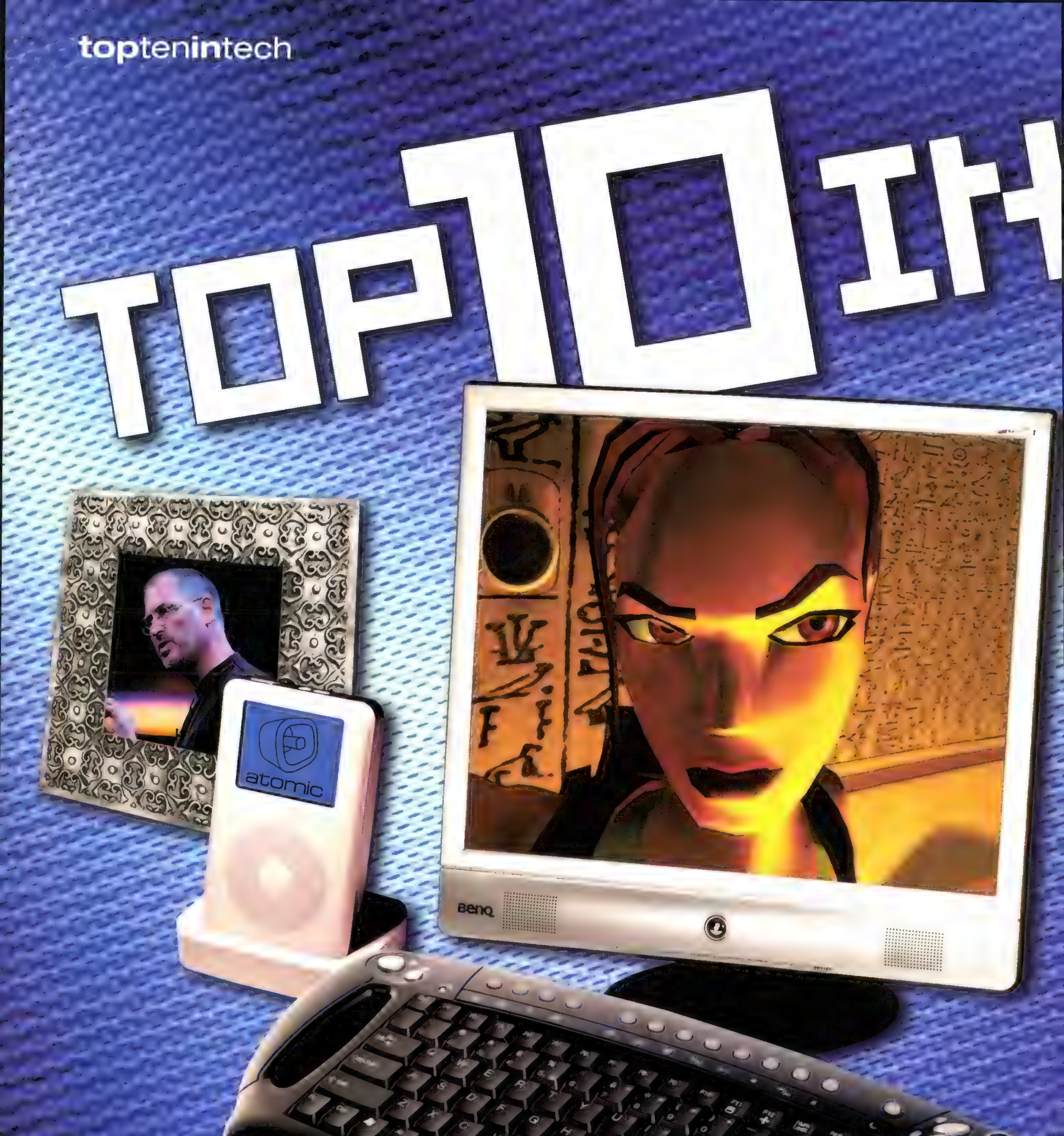
TOP 10 IT



toptenintech

TECH

TECHNOLOGY PRODUCTS: PEOPLE. GAMES & ATOMIC

Ashton Mills, John Gillooly,
Logan Booker, Stuart Ridley

Atomic's 50th issue is something special. One could call it stupendous even. It's been four years since we first started playing with tech in all the ways that people shouldn't. We overclocked, we modded, and we tweaked. We froze PCs and burnt video cards. We hacked BIOSs and built servers. We explored tech to its limits, and then pushed futher. We didn't sit around talking about how to install virus scanners or changing your background in Windows like other mags did. Instead, we made PCs *fun*.

As part of the celebration of the 50th issue, we decided to celebrate not only how far *Atomic* has come, but also how far the industry and culture surrounding technology has come. After all, *Atomic* is a reflection of the changing world around us, tapping into the vibe of cutting-edge tech, dissecting the latest and greatest products, enjoying games that bring our machines to their knees, and creating communities of like-minded people. *Atomic* has been and always will be an eye on the technology, products, people and games that circumscribe our world.

But what are the technologies that govern the way we use our PCs? The products that have defined our lives? The people who have inspired and broken boundaries, and the games that have pushed entertainment so far as to beat Hollywood?

We reveal all of these, from the point of view of the *Atomic* mindset, in these pages. A celebration of the most significant, integral, and landmark moments not only of *Atomic*, but of the technology and culture that surrounds us as well.

It's all here, in the Top Ten of Tech.

TOP 10 IN TECH TECHNOLOGY

In an industry that runs on innovation, new ideas and products are being conceived all the time. With corporations generating hundreds and thousands of new patents every year it takes something special for a technology to achieve widespread praise and acknowledgement.

These are the landmarks which,to Atomic have defined the boundaries of the geek world as we know it today, and more often than not, beyond it. Be it the very backbone of the internet, or the ability to pump more frames from your box than ever before, each of these technologies have had a lasting impact on the computing world.

Not only is it the lifeblood of geekdom, the world as we know it today would be nothing without it. While it has played the leading role in today's online landscape, it has also simplified home networking thanks to the help of DHCP, and facilitated the growth of LAN gaming as a pastime.

Standing for Transmission Control Protocol/Internet Protocol, the technology was originally developed by the US Department of Defence for use in the proto-internet. TCP/IP also happens to be a networking model, much like the ISO's Open System Interconnect (OSI), which is considered the defacto standard. Regardless, many networking technologies are based on the TCP/IP model, and many more make use of the protocol suite, which contains the User Datagram Protocol (UDP) and the File Transmission Protocol (FTP), among others. It is the building block for all other online technologies, and thus it ranks here.

In fact, the technology is now so prolific even consumer electronics devices have begun supporting TCP/IP in some way.

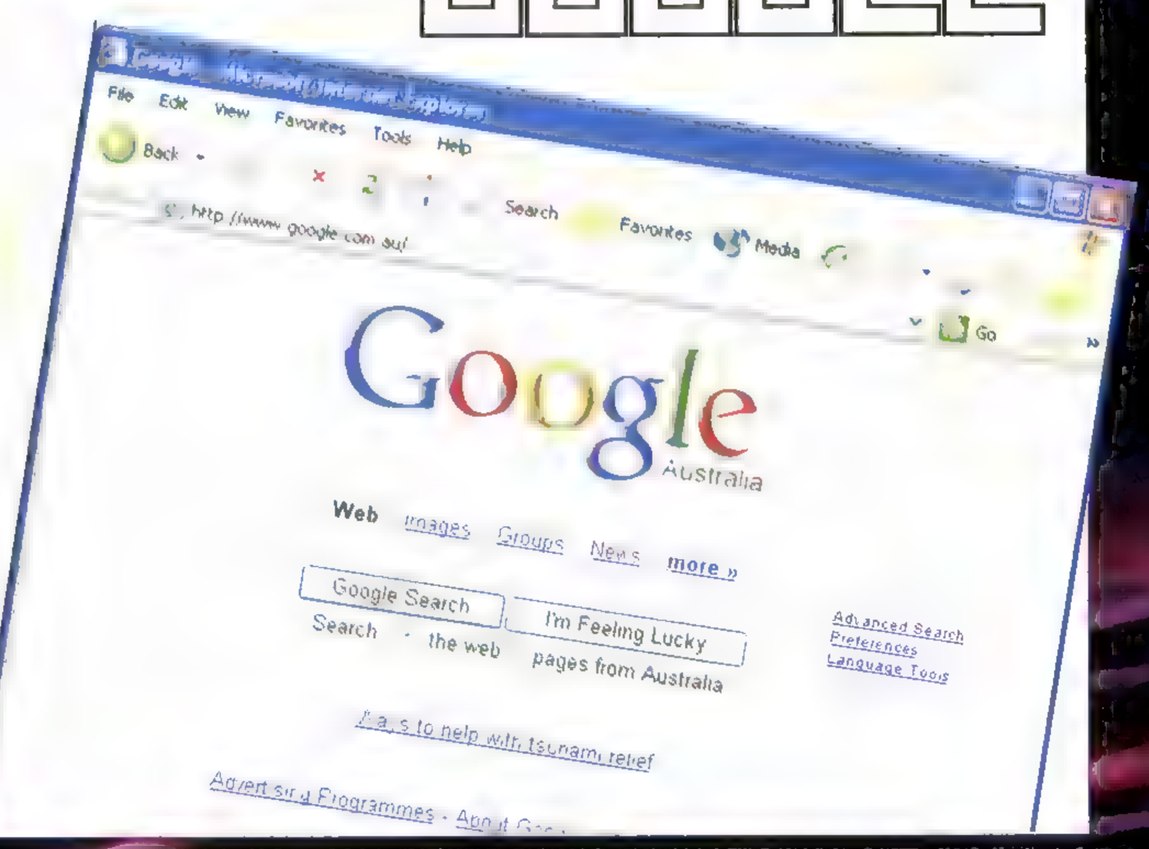
GOOGLE

While not the first search engine to his cyberspace, some may think that Google is the only one. Such is the popularity of the simple search page that could.

When it first arrived, there were several search options, but none as extensive or efficient as Google's custom search. Since then the term 'Google' has become synonymous with searching the internet for both hardcore geeks and the lay person alike. Even big guns like Microsoft are now looking to take on the search giant.

Not content to just dominate the world of queries, Google recently launched its 1GB free storage email service as well as desktop search software. As the sheer volume of data in our lives has bloated, it has been technology like Google that has kept it manageable and helped us find the information we want when we want it. What's more, it does so with a clean interface and unobtrusive advertising, which in the end is all we really want from a website.

Google is a prime example of innovative technology in action.



PEER 2 PEER

It is hard to imagine where we would be without file sharing. In both legal and illegal form it has shaped the uptake, growth and usage of the internet in a way unlike anything else. From the early joy of finding someone on the other side of the globe who shared your love of Norwegian black metal bands and was willing to trade live MP3s to the toe tapping while waiting for BitTorrent to download the new World of Warcraft patch, the ability to share files peer-to-peer has revolutionised our online behaviour.

While the recording industry and motion picture studios are still up in arms over the rampant piracy of music and movies that goes on, others are now adopting peer-to-peer as a legitimate means of distribution. Numerous games now have BitTorrent-based patch downloads, some music labels are selling tunes via the networks and a significant number of large file websites now use BitTorrent as a means of reducing load on their servers.

With countless file sharing programs and networks available, peer-to-peer won't be disappearing any time soon.

SCAN LINE INTERLEAVE

While its competitors – namely NVIDIA – were still trying to match the performance of the first-generation Voodoo Graphics, 3dfx drove forward, incorporating a new technology called 'Scan Line Interleave' on its Voodoo 2 range of cards. A technology developed by Quantum3D for its high end visualisation workstations and arcade machines, it worked by rendering each alternating scanline on a different GPU.

This allowed end users of the Voodoo 2 to purchase two matching PCI cards and, by using a special cable to connect them mix the analog signals and output an image quickly to screen. While faster, it was prone to visual artefacts thanks to the fine tolerances needed when matching cards.

The acronym has been recently revived by NVIDIA for its 'System Link Interface' technology (right), which uses PCI Express and digital signal mixing to do a much more advanced load balancing routine between two cards. ATI tried multi-chip cards with its Rage MAXX series, but it was never really stable or popular.

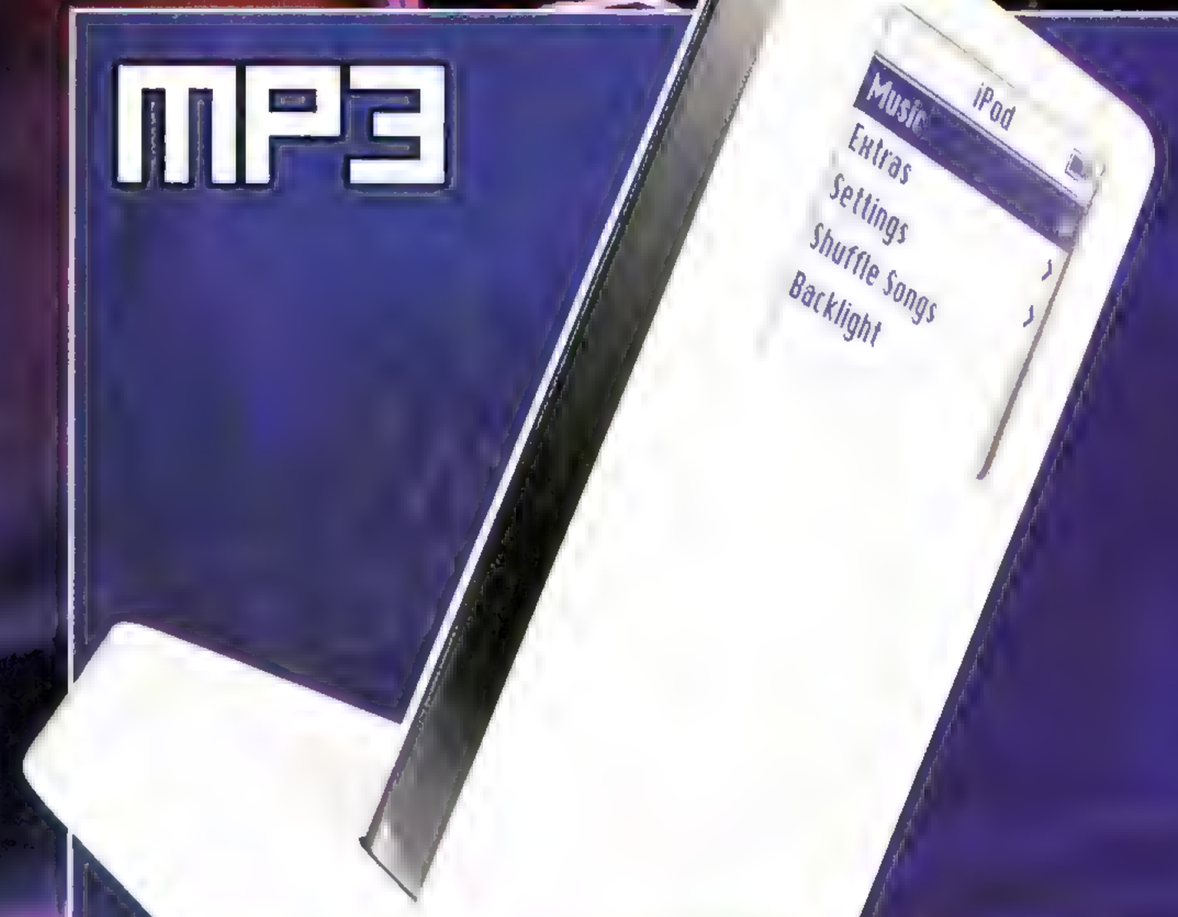
LINUX

While Linux could be viewed as a product, its very nature means that there are myriad different distros and add-ons out there, and it is more a movement than anything else. It long ago ceased to be about the creator, Linus Torvalds, and started to be all about the pursuit of excellence and collaborative innovation in software design.

Although it has struggled for acceptance in the desktop space, where Microsoft Windows is often a cruel necessity, Linux has enjoyed great popularity in server and workstation applications thanks to its ease of customisability and high security.

In a world where software is a megabucks game, the continued existence of Linux and the open source community as a whole has become a perfect counterweight, spawning numerous commonly-used applications and providing a community of independently-thinking developers united under a single philosophy. Of course, Linux has also provided competition for Microsoft – which can only be a good thing. It is constantly under development and its userbase is large and informed, making it a serious threat to the OS

MP3



Of all the technologies to appear in the last ten years or so, MPEG Audio Layer 3, or MP3, is one of the few that quite literally changed the world.

Developed by Germany's Fraunhofer Institute, MP3 began as a lossy compression algorithm optimised for sound. It inadvertently grew into a mechanism for millions of people to share music, and in turn bring multi-billion dollar middlemen like the RIAA to their knees. Humble beginnings, as they say.

Using a combination of perceptual algorithms that discard inaudible sound, as well as standard compression techniques such as quantisation and Huffman encoding, the MP3 codec can shrink a 30MB sound file to almost 1/12 its size.

Without the MP3 format we wouldn't listen to and store music the way we do today, there would be no iPod, no cheap pay-per-song online music stores, and we wouldn't have the slew of alternative codecs like Microsoft's WMA and Ogg Vorbis.

The world sounds different thanks to MP3.

DDR

When AMD launched its 760 DDR chipset in early 2001 the memory industry was at a crossroads. Synchronous Dynamic Random Access Memory (SDRAM) was nearing the end of its usable life, and CPU bandwidth was outstripping the performance SDRAM could provide.

Intel had entered a deal by which it would receive loads of cash from IP generator RAMBUS if it shipped half its chipsets with support for RAMBUS Dynamic Random Access Memory (RDRAM), which offered performance gains but was rare and expensive.

Eventually, lower-cost DDR won out and Intel finally dropped support for RDRAM. Since then, DDR has continued to flourish as both system memory and graphics memory, and since NVIDIA introduced dual-channel DDR memory it has offered bandwidth comparable to modern processors.

Originally, DDR used a naming convention based on bandwidth. DDR200 was PC1600 DDR, for example. Today DDR is marketed by its effective FSB speed (DDR333, DDR400) instead.

USB

While the Windows 95 OSR2 environment that the Universal Serial Bus launched into was less than ideal, and Bill Gate's now famous blue screen of death during a live demo of the technology not exactly great marketing, the technology has finally matured. If any of the new-generation of PC interconnects epitomise the plug and play philosophy, USB is it, and its existence has allowed a huge diversity of products to flourish.

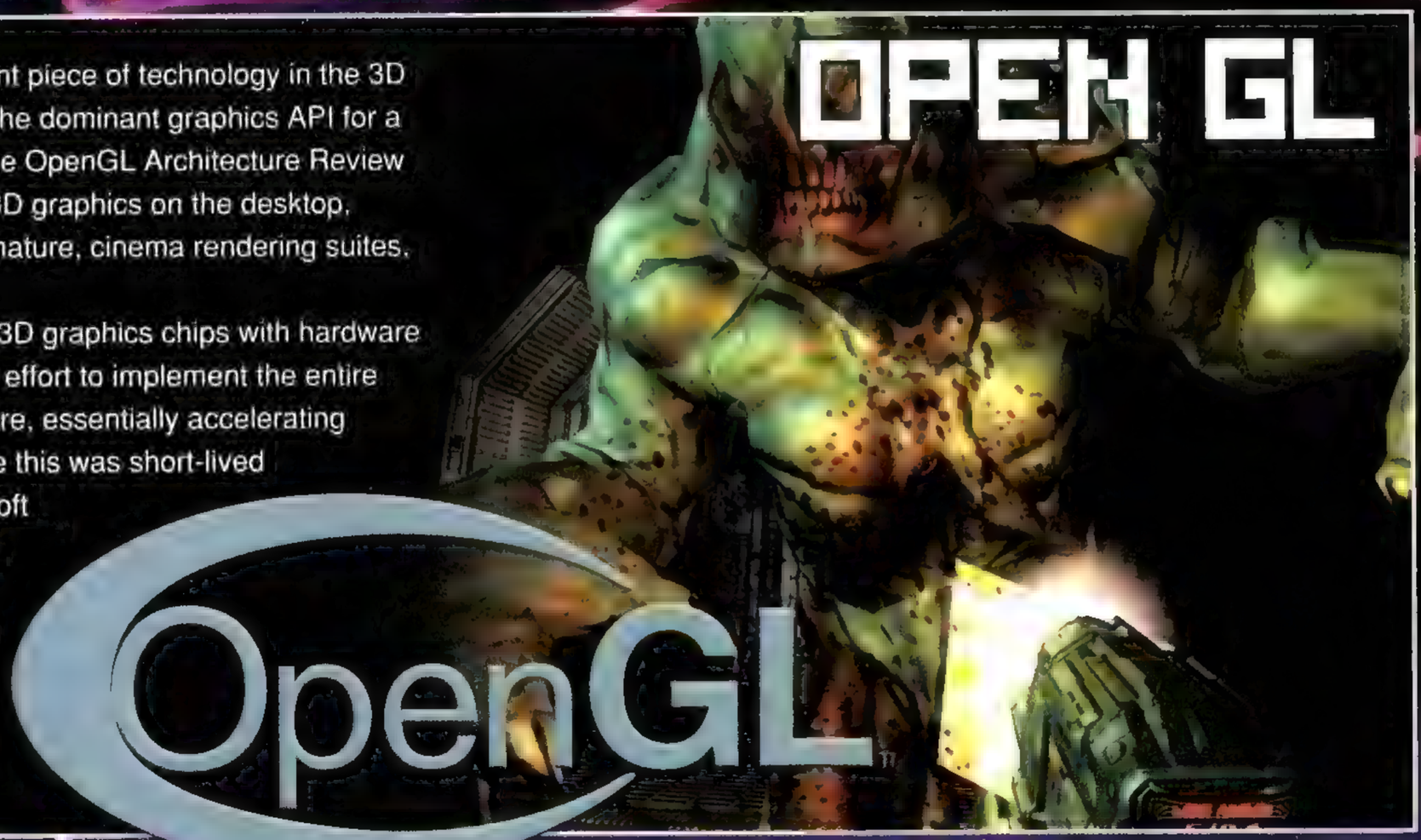
Developed by Intel, and pushed into market as a replacement for the much hated serial and parallel ports, USB suffered slow initial uptake, and even once successful the 'Hi-Speed' USB 2.0 standard was dropped from Microsoft's Windows XP and not officially supported until Service Pack 1 rolled out of Redmond.

Remember how sucky life was before USB flash keys, or when MP3 players needed a parallel port connection, or the ancient ritual of driver/hardware mating to connect a printer? USB ended that, and has continued to enable new products and help uptake of PC technology ever since.

OPEN GL

OpenGL stands as the most important piece of technology in the 3D world, even though it was only ever the dominant graphics API for a brief period. Since the inception of the OpenGL Architecture Review Board (ARB) in 1992, it has guided 3D graphics on the desktop, thanks to its flexible, cross-platform nature, cinema rendering suites, and mobile phone capabilities.

All the original work done to build 3D graphics chips with hardware transform and lighting was purely an effort to implement the entire OpenGL graphics pipeline in hardware, essentially accelerating all the functions within the API. While this was short-lived in popularity, replaced by the Microsoft driven programmable shader model, the spectre of OpenGL still looms large over today's graphics. It has recently been updated to OpenGL version 2.0, which formalises support for shader operations



WIFI

campaign, 802.11g may not be perfect but it has delivered
bandwidth and paved the way for a new generation of IT and consumer electronics products that forgo the restricting ties of wires.

It was yet another technology that suffered initially, and it was not until WEP security and quality software packages were released that it really took off. While Linux support is still partial, Windows XP Service Pack 2 has greatly simplified Wi-Fi networks.

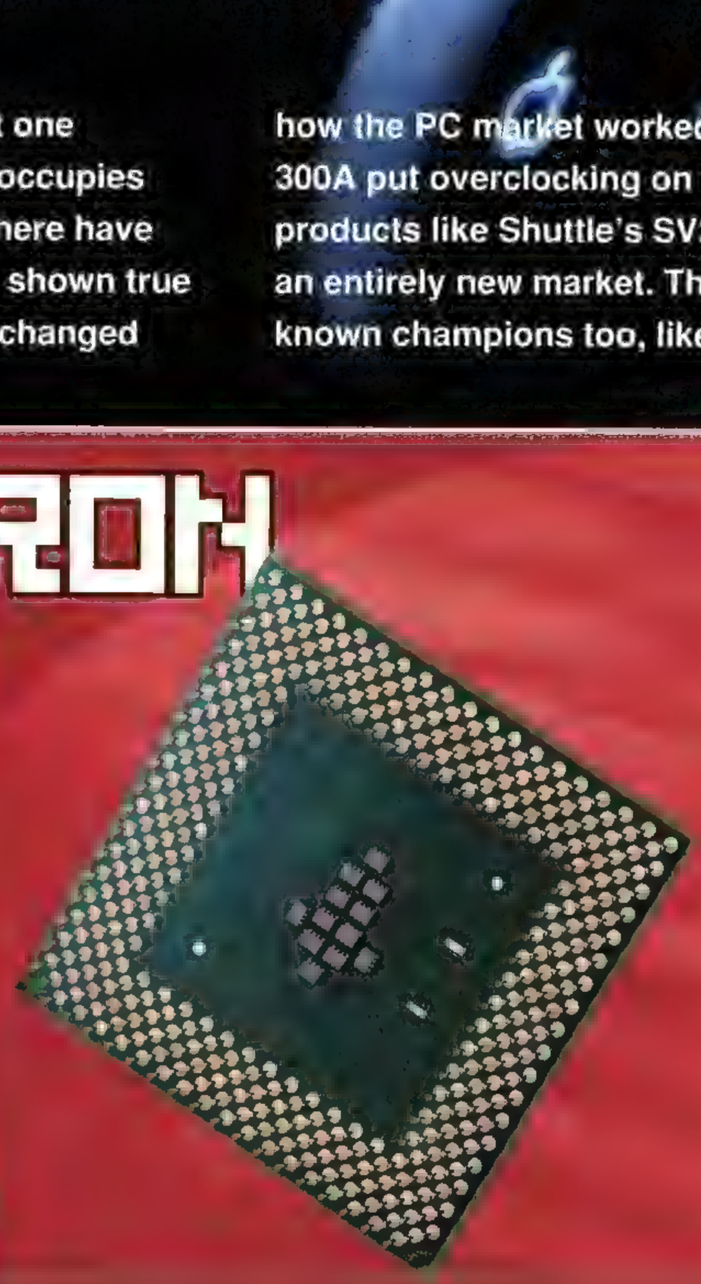
So much so, in fact, that in some cities Wi-Fi networks flood airwaves, leading to a new past time known as 'wardriving' – the mobile detection of the presence of accessible Wi-Fi hotspots.

With success beyond even the expectations of its pro
work is underway on two new standards, 802.11i and 802.1
ormer adds advanced security and the latter support for Qua
Service for streaming media. Looking further there is the faster 802.11n, as well as the wide area 802.16.3a or 'WiMAX'.

TOP 10 IN TECH PRODUCTS

While everybody has that one piece of hardware that occupies a special place in their heart, there have been some products that have shown true innovation and fundamentally changed how the PC market worked. The Celeron 300A put overclocking on the map, while products like Shuttle's SV24 gave birth to an entirely new market. There are lesser known champions too, like the Diamond Rio PMP300 MP3 player, or the Black Label Delta fan. Without these products we wouldn't have the hardware landscape as we know it today, and so we honour them and the contribution they have made here!

CELERON 300A



Manufacturer **Intel**

In the halls of overclocking folklore sits one special processor, the model that started a whole generation down the overclocking path. It was based upon the 0.25micron Covington core, essentially a Pentium 2 without any of that CPU's off-die L2 cache but with 128KB of integrated cache instead.

The Celeron 300A MHz CPU was released on 24 August 1998. While it ran on a 66MHz system bus like the Pentium 2, the inclusion of its cache on die meant that it was capable of one thing the Pentium2 wasn't – *overclocking*. Because the P2's cache was off-die, it would bottleneck any performance gains from overclocking. But throw a Celeron 300A into a board capable of 100MHz front side bus speeds and you suddenly had a 450MHz CPU that was great for gaming. While there have been many great CPUs since, the AXIA Thunderbird Athlons and Pentium 4 Northwood 2.6C for example, the Celeron 300A holds pride of place as the first to make overclocking a mainstream phenomena.

RIGHTEOUS 3D

Manufacturer **Orchid**

In the beginning there was the Voodoo Graphics, the first consumer 3D graphics chip ever made. Seeing one of these power a high speed game of GL Quake, or speed up Lara Crofts low res buttocks was probably the first 3D experience most geeks had, and this is undoubtedly the chip that gave birth to an industry.

One of the first Voodoo Graphics cards was the Righteous 3D from Orchid, who had been manufacturing graphics adapters for years. It was the product everyone wanted, and made the competing PowerVR and Rendition products look like oddities.

Even though the generational gap between the Voodoo Graphics and the current DirectX 9.0 hardware is phenomenal, it is all thanks to mainstream cards like the Orchid Righteous 3D that the industry took off in the first place.

SOUND BLASTER

Manufacturer **Creative**

While it was not the first soundcard to hit the market, Creative's Soundblaster was most likely the first Soundcard you ever heard of. It was a revolution that forever changed PC audio from a series of Doctor Who-esuqe beeps onto the path to the multichannel high quality audio hardware now common.

When it first launched in late 1989, the Soundblaster brought AM radio quality audio to the PC. This then improved to stereo with the Soundblaster Pro and then 16-bit with the Soundblaster 16. A series of innovations later came the ubiquitouis Soundblaster Live! Series, with its EAX gaming technology. It was then replaced with the more digital media focused Audigy series, which featured upgrades to EAX as well.

Since then it continued to evolve into the dominant brand of Soundcard. Despite competition from Aureal with its Vortex chip, which had some superior gaming audio features and the growing popularity of onboard sound, SoundBlaster has remained dominant.

RIO PMP300

Manufacturer **Diamond**

While it was actually the second product to market, that honour going to the 32MB Eiger Labs F10, the Diamond Rio PMP300 was certainly the first to grab headlines. It was roughly the size of a deck of cards, and used 32MB of flash in conjunction with a smart media slot for up to another 32MB storage. Running off AAA batteries it used a custom parallel port connector in its pre-USB days.

Diamond was sued after the product was incredibly successful upon launch. The Recording Industry Association of America decided that the Rio facilitated illegal copying of music, and when Diamond won the case it effectively ruled MP3 players to be legal, thus legitimising the market for future players.

Since then Apple and Creative have fought it out for the market, with Creative's Nomad an iconic player and Apple's iPod the true mass market success. It has been a rapid evolution since September 1998 when Diamond launched the Rio.

PC-60

Manufacturer **Lian Li**

It is such an old cliche now that its almost cringeworthy, but beige is not beautiful. The first product to really show us a way out of the mindnumbing blandness of PC design was Lian Li's PC-60 case, made out of brushed Aluminium. It was big and audacious, but most of all it was silvery, and shiny. It made every other PC case look kinda crappy in comparison.

But it wasn't just the looks, the case design was incredibly power user friendly, with great cooling, tool-less design and removable drive bays. It also set many a user down the modding path as they tried to conceal the optical drive or cut a side window in their very expensive case to show off the computational guts.

Price was the other big standout of the PC-60. It cost a bomb, but proved that if a product was sexy and user friendly, geeks would save up the $400 plus needed for a case minus power supply. Even that was almost unheard of at the time, and it helped launch the third party PSU market as well.

SV24

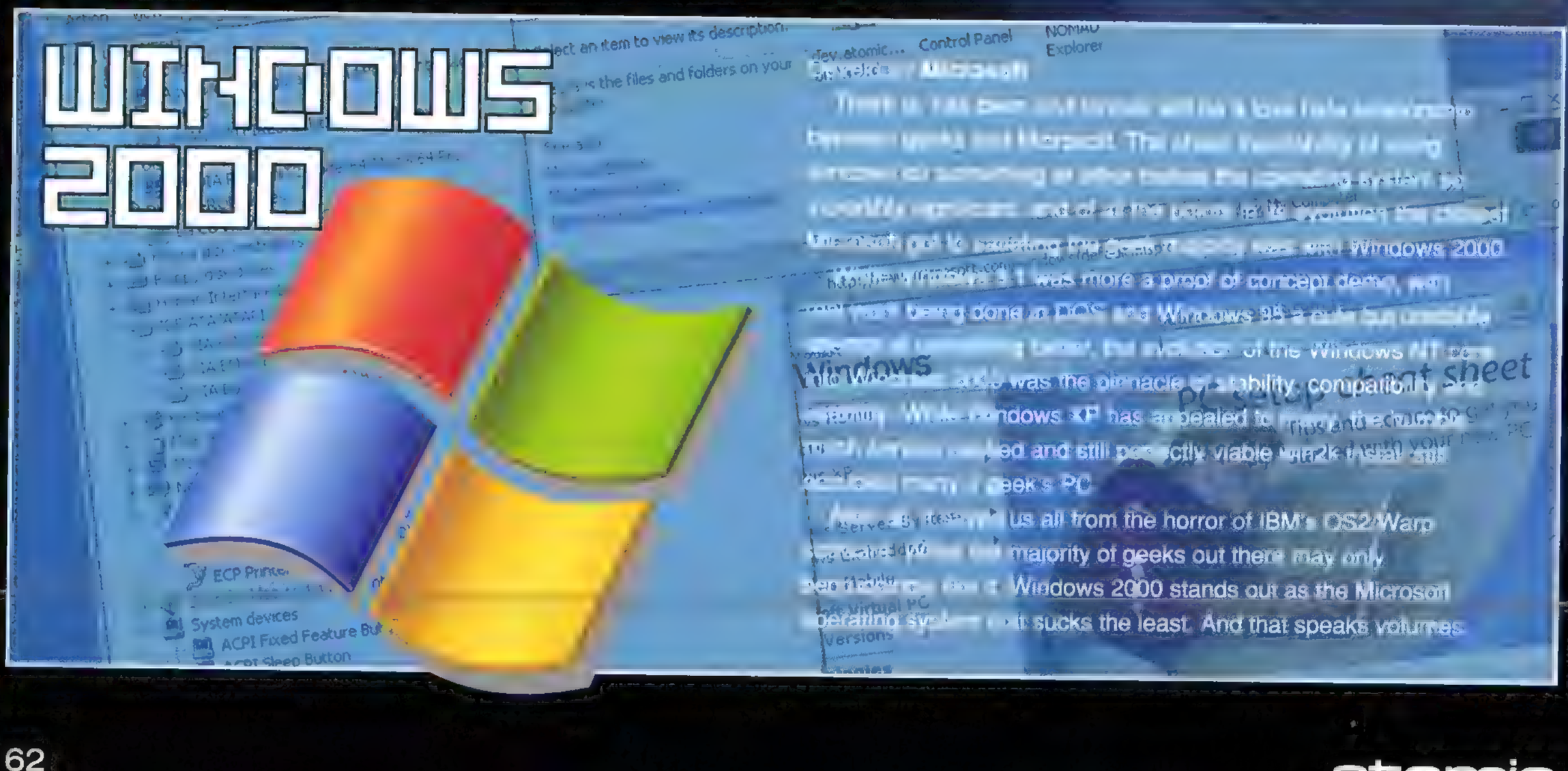
Manufacturer **Shuttle**

While the process of manufacturing one-upmanship means that there is rarely any real standout innovation to be seen in the PC component world, every now and then something special emerges. When Shuttle took a new tack and launched its SV24 XPC mini barebones system in late 2001 it blew people away and created a whole new sub category of PC hardware.

The SV24 was definitely a first step, it used a VIA chipset and supported Socket 370 Pentium 3 CPUs. It only supported integrated graphics, but it had a host of integrated features like LAN and audio to compensate for the lack of expandability

While it took a few generations to fully realise the vision, Shuttle wanted to recreate the functionality of a desktop PC in a shoebox sized format. This led to systems with space for AGP graphics, RAID hard drives and serious grunt. The sheer number of inferior imitations at Computex two years later was testimony to the brilliance of the XPC philosophy.

WINDOWS 2000



AX6BX PRO II MILLENIUM EDITION

Manufacturer **AOpen**

While Intel's legendary 82440BX chipset occupies a high mantle in the world of computing, its implementation by AOpen on the AX6BX Pro II Millenium Edition marked a turning point in component design. It was back in the days before a good motherboard meant 1001 bells and whistles, a trend started by ABIT's AT7 MAX board, so it was lean in the feature department. Except for one point – it was black. These were the days when beige and green were the PCB colours of choice. It wasn't as if it cost the manufacturer any more money to use black dye in the PCB. It was just that beige and green were the done thing. Since then we have seen a multitude of PCB colours, flashing lights, gold coloured fans, custom cooling setups, silver motherboards, even vacuum tubes and hardwired video cards. That is not to mention the assortment of neon lights, UV lights, glowing fans, front panel displays and other sparkly bits and pieces on a modern PC that we like to call *bling*. And it all started with a limited edition, black, Pentium 3 board from AOpen.

BLACK LABEL DELTA

megahertz than the Black Label Delta.

Available separately or as the fan driving the monstrous Globalwin FOP-38 heatsink fan combo for the Athlon, this 80mm, 7200rpm beast could cool like nothing else. It also pushed sound output beyond howling into screaming ear bleeder territory. It was painful when running in the open and just bearable when placed inside a sealed PC case.

But it enabled huge overclocks of the Thunderbird cored Athlon CPU, and overclockers around the world were prepared to sacrifice not only CPU life, but also a little bit of hearing in the pursuit of megahertz.

NAPSTER

Developer: **Napster**

In terms of ubiquitous geek tools, peer to peer applications rank among the most popular. While peer to peer has gotten to dizzying heights thanks to the under siege Kazaa and the traffic swallowing Bittorent, nobody would argue that everything started with Napster. Perhaps the single most important application for geeks, it taught the world file sharing, and the very nature of tradeable, copyable digital media.

Napster started in the late days of 56K dialup and flourished as broadband slowly took off. People got broadband just to share music, and products like MP3 players and even the whole digital home concept probably would not exist today if not for this humble app. While now essentially dead thanks to crippling legal action, it stays forever in our hearts as a must have app that facilitated our love of computing, the internet, and of course sharing.

TOP 10 IN TECH GAMES

Twenty years of gaming equals lots and lots of games. Choosing just ten of these marvellous works as the most pivotal and defining titles that shaped gaming as we have today is a near-impossible task. Yet, here we are, with a compiled list of the industry's most influential games. Believe it or not, it was an incredibly demanding task, one so demanding not even the combined mental agility of the Jedi Council could create a list so definitive without turning to the dark side for aid.

Considering each game has left its own, unique impression on our crazy world of virtual entertainment, it would make little sense to number them from one to ten. So here, in pure, distilled form – and in no particular order – are the top ten games that have created or changed genres, given birth to sprawling online communities, or simply blown the pants clean off our legs.

ELITE

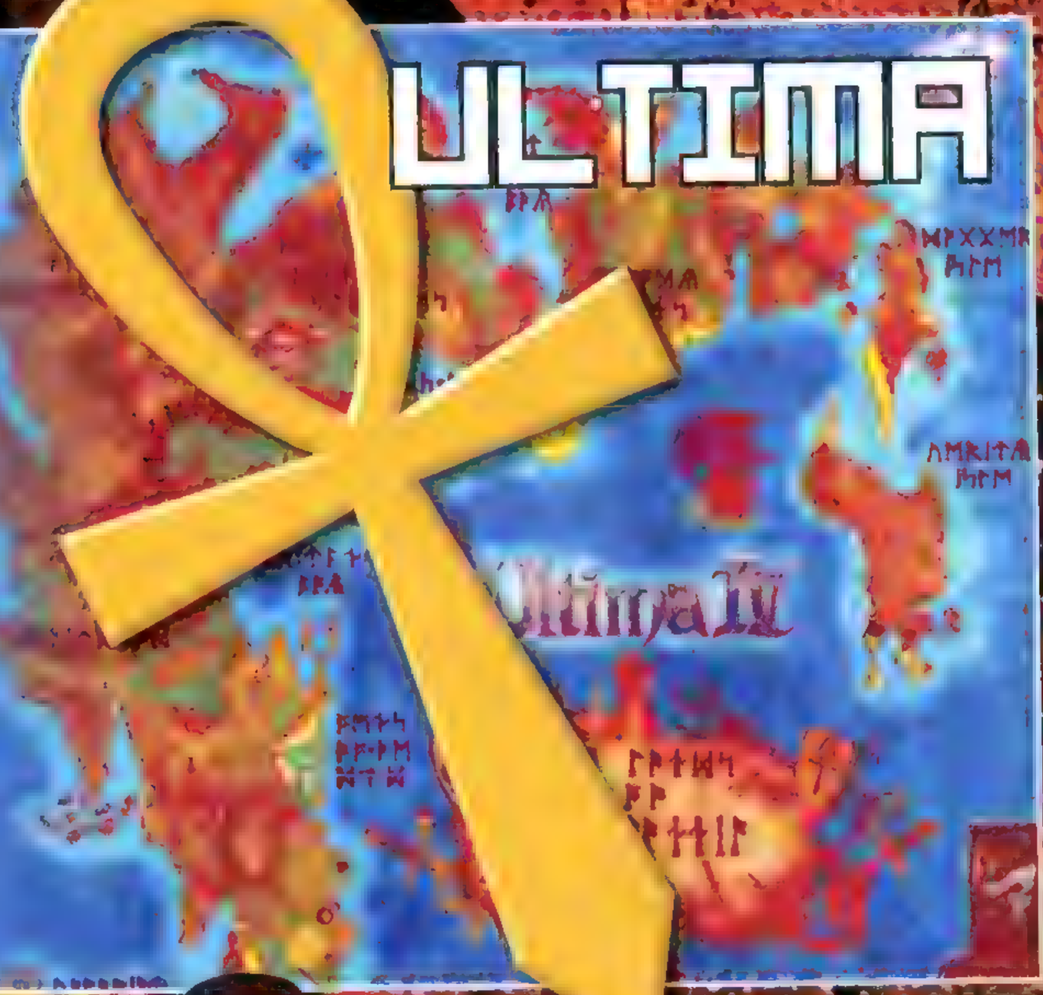
Developer: **David Braben and Ian Bell** Released: **1981**

Since its creation in 1981, David Braben and Ian Bell's instant classic has found its way onto every platform imaginable, thanks to its sheer brilliance. Barben and Bell, through some programming wizardry, squeezed innumerable planets, ships and galaxies into a mere 22KB of memory – quite a feat at the time.

With a pitiful 100 credits and a small, under-equipped spacecraft, it was up to the player to make their mark in a universe filled with limitless opportunity. Emerged in wire-frame 3D graphics, players would scoot around delivering cargo, completing missions, and if so inclined, engage in piracy. The freedom and atmosphere were present in just the right amounts, the game selling some one million copies during its time. Today, titles including Freelancer, X and even Derek Smart's Battlecruiser series continue the legacy. While the graphics may have changed, the premise remains the same – superfluous amounts of freeform, limitless gameplay.

ULTIMA

Developer: **Richard Garriot** Released: **1981**



TOMB RAIDER

Developer: **Core Design** Released: **1996**

Before 1996, if you wanted to get a rise from a game, your best bet was the text-based Infocom masterpiece Leather Goddesses of Phobos. Even then, it was an exercise in imagination and the idea of a pixel-based, appealing female lead was simply non-existent. Enter Core Design's Tomb Raider.

For the first time, salivating gamers had more than a seductively constructed sentence to feast their prepubescent eyes on. Now, they had Lara Croft: inexhaustible athlete, inquisitive explorer, and pointy-breasted English broad.

Lara quickly became the blazing icon of computer entertainment – breaking out of her video game bonds to appear in conventional media. In fact, her appeal was so great Lara has since appeared in nine unique titles over almost every platform.

Soon after her arrival, many developers began producing games with female leads including Pandemonium from Crystal Dynamics, Capcom's Resident Evil and Majesco's BloodRayne.

QUAKE

Developer: **id Software** Released: **1996**

There is much debate over the origins of the first-person shooter. Many hold games such as Doom and even Catacomb 3D as 'the one that started it all'. Oddly enough, both these games are courtesy of id Software, and the evidence strongly points to the developer as the father of the genre.

However, it wasn't until Quake that it really found its legs. Quake brought true 3D to a market filled with 2.5D, proper support for mod developers and internet gameplay via the QuakeWorld client.

Like it's cousin Doom 3, Quake was leaked to the public before release. None the less, Quake became a massive hit, breathing life into terms including 'frag', 'rocket jump' and 'camper'. Although Bethesda's Terminator: Future Shock was the first to implement mouse look, Quake cemented the mouse and keyboard as a serious control system.

Many of today's big games are based on the Quake source code, including Quake 3, Half-Life 2 and Medal of Honor.

ALONE IN THE DARK:

Developer: **Infogrames** Released: **1992**

Just when gaming had its genres sorted, Infogrames released Alone in the Dark, and survival horror was born. Players joined either Edward Carnby or Emily Hartwood in an engaging adventure to solve the mystery behind the death of Emily's uncle, Jeremy Hartwood. The game took place in a large, creepy mansion full of shadows, old furniture and creatures unknown.

Forgoing the usual first-person or third-person perspective, AITD employed a more cinematic way of viewing the world by changing to different static camera angles as the player negotiated their environment, giving the impression that the player was being watched as they tried valiantly to stay alive.

Alone in the Dark spawned a number of sequels, each one as good or better than the last – except for the fourth installment, which is considered by most as the weakest link in the series. Thankfully, Infogrames (now Atari) wasn't the only developer that had ideas for the genre...

EVERQUEST

Developer: **989 Studios** Released: **1999**

Until EverQuest, massively multiplayer online (MMO) games were mostly the domain of MUDs (Multi-User Dungeons), unless you were willing to endure the evolving mess that was Origin's Ultima Online.

In 1999, Sony released EverQuest – a multiplayer, internet-only role-playing game that had the player fighting creatures and interacting with characters from a jumbled mass of fantasy worlds. It changed the world of online forever.

Unfortunately for their social lives, players would spend days on end levelling their characters, to the point where they would forgo their usual routines of eating, sleeping and attending to their hygiene in order to squeeze in a few more precious hours of their beloved internet ecstasy.

This phenomenon afforded the game the alternative title of 'EverCrack' for its addictive qualities, and many companies have since cashed in on the formula.

THE SIMS

Developer: **Maxis** Released: **2000**

No one quite understands the phenomenon that is The Sims. The first game touched on a very special combination of elements that roped in more than just fans of the original Sim games. It also drew in the most underrated market for video entertainment today – women. The magic formula developers had been chasing for years had finally reared its head, and it hadn't evolved from a hammy Barbie game, much to their chagrin.

Gamers are fiercely divided over the game. While some find the mundane activities of cooking food, going to work and using the toilet poor facsimiles of what one can already do in real life, others are enthralled with the voyeuristic nature of the title.

The game has no real conclusion – players can continue to domesticate their computer-based characters by adding new furniture, making renovations and engaging in social activities indefinitely. The endless nature of the game serves as both a lure and deterrent.

Developer: **Blizzard Entertainment** Released: **1994**

It was not immediately apparent which real-time strategy deserved the title of 'genre defining'. In one hand, we had Westwood's Dune 2, and in the other, Blizzard's Warcraft. Both games were highly deserving.

In the end, we settled on Warcraft, the reason being that it solidified the genre with its innovative gameplay and multiplayer. Starcraft, Blizzard's futuristic 1998 RTS, really highlighted the developer as a master of the genre.

While Warcraft takes the spot, Dune 2 deserves special mention. With Dune 2, Westwood (now EA Pacific) forged a genre where there was nothing previously, and rather than rest on the game's success, the developer produced Command & Conquer and Red Alert.

Currently, Blizzard and EA Pacific have a stranglehold on the genre. It's a testament to the awesome ability of these companies to produce high-quality games with incredible longevity.

Developer: **MicroProse** Released: **1994**

To this day, Julian Gollop's miraculous series of strategy games have few peers. X-Com remains firmly wedged in the hearts and minds of gamers everywhere. It paved the way for titles such as Jagged Alliance, Fallout and Silent Storm.

It began decades ago with a little known game called 'Chaos'. Players would control a wizard on either side of a game board and, using a variety of spells gained during play, would combat their opponent. It set the tone of Gollop's games to come.

His defining moment was X-Com: Enemy Unknown – a turn-based strategy game that pitted the player against an alien menace. Not only was the player required to combat the enemy via careful resource management, but also research new technologies and dissect alien equipment to augment their forces.

The game culminated in an epic showdown between man and invader, using hybrid weapons and gathered intelligence to eliminate their unearthly foes in a blaze of vindictive fury.

Developer: **LucasArts** Released: **1987**

It's an unfathomable shame that LucasArts is now only known for it's sub-par Star Wars games, considering that earlier in its history it created *the best* adventure titles.

Among these were the Monkey Island and Indiana Jones series, Sam and Max: Hit the Road and, of course, the Maniac Mansion series. Characters such as the Purple Tentacle and Bernard Bernoulli will, regardless of how deep LucasArts has buried them, remain the most innovative and interesting characters featured in a computer game. While all these games are stellar in their own right, it was Maniac Mansion that put LucasArts on the map. Using its proprietary SCUMM engine, it crafted one of the most engrossing adventure titles ever.

Now, long gone are the days when you could sit down, load up a game and see the dialog: 'You know what they say: "If you're going to save the world, you got to kick some old ladies down the stairs."'

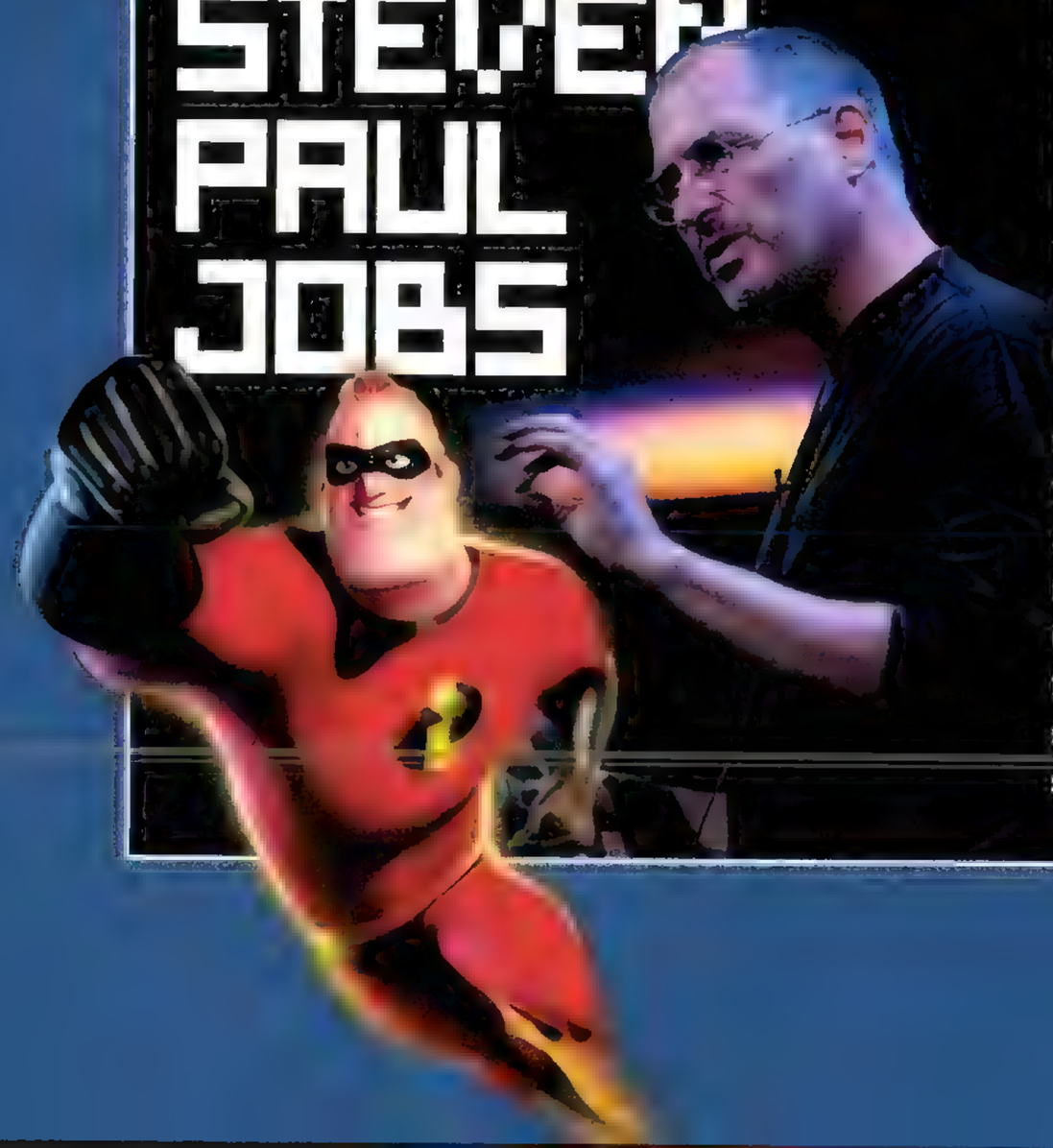
TOP 10 IN TECH PEOPLE

Not so many generations ago if you indulged in obsessive (some may say nerdy) technological pursuits such as computing at high school you might have been regularly beaten by the athletic, made the butt of jokes by the funny and humiliatingly [illegible] by the beautiful.

If you were lucky, maybe you'd have found a closed, small [illegible] social circle to geek out and compare notes with, dreaming of a time when the geek will walk proud and mighty.

Thanks to a bunch of nerds who dared to dream, the evolution of com[illegible]ng over the last three decades has bro[illegible]ht with it many awesome technica[illegible]d cultural movements that have sin[illegible] shaped the world.

STEVEN PAUL JOBS



Born **24 February 1955** Where **Green Bay, Wisconsin, USA**

Steve Jobs has a knack for ideas that make people think different... but sometimes they don't like it. In the beginning Jobs and his mate Stephen Wozniak quit Atari to launch their first business: building Blue Boxes. The novelty wore off. Inspired by the Homebrew scene they give a second start-up a go: marketing Woz's latest invention, the Apple PC. Jobs eve sold his VW van to help raise capital. Later Apple Computer milks the booming home computer market with the Apple II (1976), but its next two products – the Apple III (1977) and Apple Lisa (1983) – were commercially hopeless.

Apple bounced back with the GUI-endowed Macintosh in 1984, but Jobs was given the boot in 1985, leaving to found NeXT Software which produced highly advanced tech that didn't sell well. In 1986 Jobs bought LucasFilm's computer animation division and grew it into Pixar. At the time it created poorly selling high-end computers for rendering really nice animations. Pixar later signed a US$26million deal with Disney in 1995 to produce Toy Story, and the rest is history. By 1996 Apple bought NeXT for US$406million and Jobs soon became the company's 'interim CEO' on an annual salary of $1 (plus stock options, expense accounts etc). Apple has since produced several good-looking and cleverly-marketed lines including the iMac and iPod.

STEPHEN WOZNIAK

Born **11 August 1950** Where **San Jose, California, USA**

The other Steve in Apple's history is really the man responsible for kick starting the personal computer revolution. He built his own radio station at 11 and was designing his own computers by 13 years old – in 19-freakin'-63!

After joining the Homebrew Computer Club where he hung out with John Draper and Steve Jobs in 1975, he dropped out of Berkeley to build the Apple I using MOS Technology's cheap 6502 chip on a single circuit board with ROM and running his own version of BASIC (Integer). On April Fools Day 1976, he and Jobs formed Apple Computer Company, (partly funded from the sale of his programmable calculator) and began selling the Apple I. It ended up making nearly a million dollars but that was small change compared to earnings from the hi-res graphics beast called the Apple II, which included on board sound plus several other Woz-innovations such as a cheap floppy drive, a Breakout game and a bunch of custom software.

A plane crash in February 1981 briefly left him with severe short-term memory loss, so he took time out from Apple. Although he inspired the Macintosh during his last two years at Apple (83-85) he also fell out with Jobs, and ended up resigning. Since then he's devoted himself to philanthropy, particularly in the field of public education.

DAVID KIRK

Born **31 October 1960** Where **Cincinnati, Ohio, USA**

Like us, David Kirk lusts for visuals that please the eye and cause the blood to pump harder. While we've been fragging, he's professionally devoted to bringing life-realistic graphics to mass-market computers. His expertise in CG beauty was honed at MIT in the early 1980s and first developed professionally at Raster Technology working on z-buffering and shading. That led to a gig at Apollo Computer (a division of HP) where (with Doug Voorhies) he co-architected the first workstation to offer hardware texture mapping. He also collaborated with James Arvo researching ray-tracing algorithms; and closed the decade by starting a Ph.D in CompSci at Caltech. His research landed him the Chief Scientist, Head of Technology position at video game company Crystal Dynamics, where he says he 'developed a passion for the mass market, and bringing graphics to the world' – a passion that logically took him to NVIDIA in 1996.

As Chief Scientist and VP of Architecture he's masterminded the evolution of GPUs from the RIVA 128 to the TNT and up the entire GeForce range – quadrupling performance every year. His vision for programming has also given developers neat features for creating the real time effects, like reflections, shadows and textures – and some day he'll help conjure gaming graphics so awesomely realistic that nature photographers may as well retire.

RICHARD MATTHEW STALLMAN

Born **16 March 1953** Where **Manhattan, NYC, USA**

The gospel of Saint IGNUsius:

'Non-free software keeps users divided and helpless, forbidden to share it and unable to change it. A free operating system is essential for people to be able to use computers in freedom.' Amen to that.

Richard Stallman/rms/Saint IGNUsius is the last of the old school hackers still firmly maintaining the Hacker Ethic: the free flow of information.

rms fell in love with computers in Junior High, mastered assembly languages by the time he graduated high school, and became a hacker at MIT's AI lab during his first year at Harvard in 1971. He remained at the lab until 1984, when the hacker community there fell apart as everyone, bar him, went off to coin-it making Lisp machines. No matter, he kept the faith, launching both the Free Software movement and the GNU ('GNU's Not Unix') Project. Five years later he nailed the principals of the former by inventing the concept of copyleft and wrapped its ideals around the later to create the GNU General Public License. By that stage Free Software evangelism was taking up most of his time. GNU didn't get a solid kernel until 1991, when young Linus Torvalds used the GNU development tools and libraries independent of the GNU Project to create GNU/Linux.

LINUS BENEDICT TORVALDS

Born **28 December 1969** Where **Helsinki, Finland**

In April 1991 Linus Torvalds was 22, four years into a degree at Helsinki Uni and, like most of us at that age, seriously absorbed in extra-curricular activity.

Except in Linus' case, his obsession was to develop his own Unix OS kernel as a replacement for Minix on his home PC. Perhaps more importantly, he wanted to share his work with other OS hackers in the hope they'd be interested in using — and improving on — his creation for themselves.

Thus on August 25 Linus announced what he was doing to the comp.os.minix newsgroup:

'I'm doing a (free) operating system (just a hobby, won't be big and professional like gnu)... I'd like to know what features most people would want. Any suggestions are welcome, but I won't promise I'll implement them :-) '

While today's Linux kernel contains only 2% actual coding by Linus, he's been gifted the status of Benevolent Dictator for Life by the Open Source community and continues to have final say on any changes.

TIM BURNERS-LEE

Born **5 August 1955** Where **South-West London, UK**

Born to geek parents (who met working on the first commercially sold computer) Tim Burners-Lee was encouraged to play brainiac games such as calculating the square root of imaginary numbers or inventing supercomputers made of cardboard. See what happens when you avoid sweaty sports? While his childhood computers were make-believe, by the mid-1970s at Oxford Uni, he'd gained the skills to build his first real hotbox with a soldering iron, TTL gates, an M6800 processor and an old television. He graduated in 1976 and held down several tech jobs, including a six month contract as a software engineer in 1980 at CERN, in Geneva, Switzerland. There he came up with a piece of software called Enquire designed to sort and keep track of his notes in a hyper-efficient, hyper-linked way and before the decade was over, that little concept had grown into his proposed global hypertext project for the Internet. All it needed was a server (httpd), easy to learn coding (HTML), a way of addressing file locations (URL) and a method for sorting them (HTTP). When all the elements of his project were ready, he belted out a simple WYSIWYG hypertext browser/editor and launched the World Wide Web in 1991.

JOHN T DRAPER

Born **unknown** Where **unknown**

John Draper, also known as 'Captain Crunch', was exploring the reaches of cyberspace decades before the term was invented, mainly by phreaking — subverting a phone company's call system with the famous Blue Box to explore its network. He befriended Steve Wozniak at Homebrew, who promptly placed a free long distance call to The Pope after Draper showed him how the device worked. Then one day in 1971 he met a blind kid called Jimmie on Ma Bell's network who told him that if you took a toy whistle out of a box of Cap'n Crunch cereal and glued the third hole shut you'd create a perfect 2600Hz tone — which happened to be the frequency used at the time to enter unrestricted operator mode on AT&T long lines... The Blue Box unlocked the switching system... and the whistle kept trunk lines open... see where this is headed?

Eventually Ma Bell's legal heavies caught up with him and had him busted. Still, it wasn't all bad. Draper was allowed to continue his computer work as part of a probabationary prisoners' 'Work Furlough' program, and some of the coding he did evolved into Easy Writer, the first word processor for the Apple II.

JOHN C. CARMACK II

Born **20 August 1970** Where **Kansas, USA**

When you make offerings to the gods of gaming goodness, always have something special for John Carmack whose magical coding has generated more spooge-worthy gaming worlds than the next guy.

Carmack sacrificed his studies at the Uni of Missouri, Kansas City for you to do some freelance games programming and was soon headhunted by Softdisk. There he met John Romero who was designing Dangerous Dave, and in 1990 Carmack, Romero and their workmates Tom Hall (a game designer) and Adrian Carmack (an artist) began working on the first Commander Keen platformer – but not for Softdisk. Instead, they took a publishing deal offered by Apogee Software, which saw them form id Software to distribute a slew of killer titles such as Doom and Wolfenstein under the shareware distribution model.

Carmack's brilliant programming has been a major force in the rise and rise of 3D shooters, a genre id Software has frequently dominated from Wolfenstein 3D, through the entire Quake series and of course Doom 3. No wonder competing developers license his game engines to create other hits in the genre such as the mighty Half-Life and Medal of Honor.

GORDON FRENCH & FRED MOORE

Born **n/a** Where **Menlo Park, Silicon Valley**

Check this poster for a new computer users group: 'Are you building your own computer? Terminal? I/O device? Or some kind of digital black magic box? If so, you might like to come to a gathering of people with like-minded interests. Exchange information, swap ideas, help work on a project, whatever...'

Interested? You'd have to time-travel to Silicon Valley for the Homebrew Computer Club's first meeting organised by Gordon French and Fred Moore on 5 March 1975, in French's two-car garage.

French was a hardware hacker who'd consulted for the People's Computer Company but found its original air of enthusiasm was thinning as it settled down to business. Most of all, he missed the camaraderie of PCC's old Wednesday night potluck dinners attended by all kinds of interesting people in Northern California's alternative computer scene. Moore was also a hardware hacker at PCC who thought more people should get together and teach each other how to build and use new tech such as the Altair 8800. The two of them agreed something had to be done. So Moore put up that poster and a legend was born.

BRAM COHEN

Born **1975** Where **New York, USA**

Bram Cohen was first famous for co-captaining his school's Math Team to win the New York State Math League in 1992. Now that might not sound sexy, but there are two things Maths genii are good at: distribution problems and algorithms. Those skills landed Cohen dotcom gigs during the mid-to-late 90s, before he ended up working on the innovative but unprofitable MojoNation encryption software. It allowed files to be broken into many pieces and distributed among other computers, thus ensuring multiple download sources – the same concept that would form the basis of the killer P2P program Cohen set out to create in 2001.

He reckoned that large files could be downloaded faster if they didn't come from a single source (as with KaZaA). So he created BitTorrent – which uses peer networks to download and re-share files via many different sources simultaneously – resulting in faster transfer speeds as more people share. BitTorrent proved so successful at providing fast transfers when beta tested with free pr0n that it was soon used for Linux distros and other massive file sets, such as movie collections.

Cohen's main interest now is in helping both open source developers and paying clients such as Valve to distribute their latest releases.

TOP 10 ATOMIC MOMENTS

Since the dawn of time, space and everything, the master plan for the universe contained a magazine.

A cool, funky magazine; a magazine for the hardcore of the hardcore – unique individuals with a technical bent that far exceeded the normal parameters required for life.

This fated magazine would cover, in detail, the debut of Intel's Pentium 4; the life and death of RDRAM; the rise of AMD and its magical Athlon; the crazy, lightning evolution of NVIDIA's GeForce and the maturation of ATI's market-stealing RADEON. That magazine, of course, was none other than *Atomic*.

Finally weaved into the space/time continuum four years ago, *Atomic* has influenced the lives of people far and wide. Where there was nothing for the case modders, overclockers, tweakers and benchmarkers, there was now *Atomic*. It has gone where no other magazine has gone and, from its mystical beginnings, a community of people has grown. A community filled with personality, life and intelligence.

50 issues on, and both magazine and community continue to thrive. Join us as we explore the history of the world's most bad-arse computer magazine and relive the moments that have made the voyage an unforgettable one.

IN THE BEGINNING

Atomic didn't actually start as *Atomic*.

The magazine was always destined to be the hardcore tech-head bible, but like any creative work, it went through various stages of development. For example, the original working title for the magazine was *PC Builder* – a name so utterly vanilla it would have put ice cream makers out of business.

To understand the thinking behind a title, it's important to note that the magazine was initially destined to cater for those who preferred to build their own systems.

However, the concept evolved into a mag that not only showed the adepts the best box building techniques, but also broke the ranks of computer magazines everywhere and actually spoke in the language of the geek.

Like Atomic's launch editor Ben Mansill, the name 'Atomic' has shady origins. Suffice to say, the origins were just shady enough to make it the final name for the magazine.

The original look was conceived by designer Rik O'Hanlon Smith, while bright-eyed Bennett Ring and jamming John Gilooly armed the cannons as staff writers. Tim Dean – who would later go on to helm Atomic's sister magazine *PC Authority*, swabbed the decks as consulting Technical Editor.

Finally, after months of preparation and ancient voodoo rituals to guarantee its enduring sexiness, *Atomic*, the Atomic website, and the *Atomic* forums made their debut on 17 January 2001.

No one, however, could have predicted just how successful the fledgling magazine would become.

With the name change from PC Builder to Atomic, world domination was inevitable.

TOO COOL

Come issue three newsagencies everywhere were graced with one of the best and well-received covers in the history of, well, covers – the 'Ice box'.

Magazine covers are usually the product of a bubbling cauldron of inspiration and delirium, united by publishing science, and Ice Box was no exception.

The idea to take the object of geek desire, the Lian Li PC-60 case and freeze the sucker was such an obvious concept to all of the staff that there was no way it wouldn't happen. But to do so was an adventure in itself. Freezing a giant, hollow box made of relatively weak aluminium is not an easy task. We didn't realise at first that it would require slow freezing over a week in distilled water in order to ensure you could still see the case inside the iceblock.

After talking to experts ranging from ice sculptors to professional ice makers, in the end we went with the slow freeze process using a Sydney-based ice maker, creating a solid block so large it needed two people just to lift it.

But perhaps the most hilarious part of the whole endeavour was the phone call made by the editor, Ben Mansill, to the Lian Li distributors Anyware, asking for a case.

It went something like:

'We want to use a PC-60 for the cover. Yeah, that hot aluminium job – it'll be perfect. Oh yeah, by the way… we're going to freeze it in a block of ice.'

A pause.

And then: 'Ice, you know, frozen water,' followed by a drawn-out 'yeah' as the magic of the idea clicked with Lian Li and permeated into reality. And the result was stunning – see for yourself and check out Issue three on the Atomic Collection cover CD this month!

Freezing a case inside a block of ice was trickier than first thought. Getting it out of the ice was the fun part.

THE FORBIDDEN WORD

Despite their rapid assimilation into common usage, some of the best words ever are still taboo in publishing. While some may argue that 'hot pants' and 'Macarena' should be banned, debate reigns constant over the proper use of strong swear words.

And, when *Atomic* finally made that bold step over the forbidden line, it was actually a fairly innocuous one.

In the history of computing, one type of product has stood head and shoulders above others in the frustration stakes – sound cards. So when Tim Dean, in his editorial, casually dropped the 'F' word while retelling his brave attempts to install one in his PC (there was no way we could cut it – see *Issue 8, page 14* on the cover CD),

Two weeks when that issue was being printed were nerve racking to say the least. Wondering how people would react was a big concern of ours, and we expected a flood of complaints.

And if two letters are considered a flood then we got one, but otherwise it went unnoticed.

This then led to the emergence of many possible replacements, not the least of which was 'fuck'. The word enjoyed many outings in the mag before, eventually, returning to the graveyard to sit alongside 'all your base are belong to us' and '1337 HaX0r' as words to be used only on special occasions, such as never.

X-RAY SPECS

NVIDIA launched the GeForce3 in a very different market to that which we have today. At the time it was the only serious player in high-end 3D, and even though ATI had its slowly improving RADEON, it still wasn't in the same league as NVIDIA's offering. When the GeForce3 launched it was seriously desirable, and everyone wanted to get their hands, feet and other assorted appendages on one.

For some time there were only two cards in the country – one was from Guillemot and the other MSI. Both cards were based on early, slightly unreliable silicon revisions that came with the stipulation that benchmark numbers would be lower than final release. This meant we couldn't publuish them as representative of the final product, but we published what we had anyway to give readers a taste of what was to come.

At the time we'd just come off our Lian Li freezing expedition and wanted to one-up it in some way. By happy circumstance one of the staff was related to a radiographer, or X-ray taker to the layperson. So, the week before we received the GeForce3 cards, we got one of our beautiful GeForce2s and x-rayed the mofo as a test. The result was truly lovely.

As soon as the first working GeForce3 card hit the country, greeted of course by the exploding of fireworks and the beating of hands, it went not to our test PC for a weekend of eye-candy gaming, but instead became our second subject in the pursuit to find the cover of covers.

It worked, the x-ray shots looked great and what's more, the card still worked. Although representatives from both Guillemot and MSI were seen intently examining the cover to work out if it was their card or not – it was the MSI one, but we weren't going to spoil the fun by telling them. Cue evil laughter.

MSI's Starforce GeForce3 card was the first one tested by Atomic.

GROUP HUG

The Atomic community first made the transition from online to real world with the first Sydney 'meet' in mid-2001. This was topped by the birthday party for the magazine – WorldLAN in Melbourne – the following January.

If you ask someone to come up with a LAN name at 10pm during a week of late work nights, don't be surprised if you get 'WorldLAN Gibtragcon 97 XP' as a reply. It's that delightful hour when everything seems funny, and the only thing funnier than a single joke is several nested together.

The Atomic staff were completely blown away when readers got together through the Atomic forums and decided to throw the magazine a birthday party. It's the sort of thing that only happens in dreams – well, our dreams at least, along with banana-throwing monkeys and Cameron Diaz.

Besides a little support and the name of the event, staff had little to do with organising the event. Designed as a LAN for Atomicans by Atomicans, it sparked a series of annual events and raised money for the Multiple Sclerosis Society of Victoria, a charity chosen by the organisers.

Held at La Trobe University in Melbourne, the event marked the first anniversary of Atomic going on sale, and featured a few traditions of its own, such as the Atomic road hike and fun GameMania competitions.

With numerous events like paintball, meets and LANs organised by the Atomic readership, WorldLAN stands out as an event that helped galvanise the Atomic community.

In January 2004, Atomicans once again celebrated the birth of the magazine for the fourth time, and, for the sake of history and [illegible], was held at La Trobe University.

PARHELIA SHENANIGANS

In the hardware world, release dates are used as weapons in the constant battle of one-upmanship. To compensate for this, hardware companies usually give magazines head-starts with pre-launch hardware. While this can make for some intensely painful troubleshooting, it also means we end up vetting content in as freshly as possible.

There is always an element of luck though in getting a product first, and having time to test, as well as hearing the release date will be close to the magazine launch date. Juggling this is part-publishing science, part-sacrificing goats to the electronics deities. In the case of Matrox' Parhelia graphics card, we got hit with the worst dose yet: a flying cow-packed hurricane of retardation. Twas one of those weird two-part announcements, the technology was announced, but cards weren't available until later. We had been talking with Matrox for some time, and on the day had the card announcement looming, two days before Atomic hit the shelves. We had photos of the card and a feature to back it up. Then, a mere two days before the magazine went to print, Matrox changed the launch date. Oh ya. Video cards are always the worst when it comes to last-minute changes. Ever since issue 1, when 3dfx' assets were acquired by NVIDIA the day we went to press. In later issues, the GeForce FX and the GeForce4 MX were benchmarked in mega overnight sessions, just two days before going to print, so a change like Matrox', while annoying, was still bearable.

After being bitten by shifting launch dates, Atomic gave Matrox's Parhelia card a thorough workout in issue 20 (see page 40 issue 20 on the cover CD)

FRISBEE MARK

Like the undead and week-old pizza, articles can take on a life of their own. Since the launch of Atomic, we have had our funny back page, Fallout, deliver a plethora of geeky humour each month. Fallout was the name given to the page after a heated debating process between it and Ben's suggestion 'Far Canal'. We still live in hope that Far Canal will get an outing some day.

After articles about such burning topics as '|337Speak' and percussive maintenance – where one hits certain parts of their case to solve a variety of common PC problems – we came up with a back page concept for a new benchmarking technique called 'FrisbeeMark'. This was based on the tenant 'I can trust it about as far as I can throw it' and involved measuring the flight distance of various pieces of computer hardware.

While acknowledged in the Atomic offices as pure mad scientist-level brilliance and never actually used for reviews, the Atomic readers took charge and made it into an exciting competition for those brave enough to put their quivering, underdeveloped biceps to the test.

A fun, secondary objective, one that even spectators can participate in, is to avoid being scratched by flying bits of splitting plastic or brained by a one-kilo CD drive.

Since then, Atomic events have usually included a FrisbeeMark competition, in which readers line up to lob a piece of computer hardware into a distant cardboard box. Over the years this has included everything from optical drives to power supplies, but the end result has always been a prize of some sort or, at the very least, recognition by peers of your ability to toss.

Born largely from stupidity, Frisbeemark took on a life of its own as a very Atomic use of old PC hardware (see *page 98 issue 10* on the cover CD)

HOT GRAPHICS

By the time issue 10 came around the staff were again hankering to do something different.

Burning a video card may seem like an odd choice, but again it easily earned as the only natural thing to do. But how do you go about setting fire to something in a way that delivers the maximum aesthetic value?

After consulting a special effects expert, the answer was Zippo fuel. While highly not recommended due to toxic smoke and the tendency for capacitors to explode violently – one just missing the camera during the photo shoot – it was the perfect solution to our need for smouldering hardware.

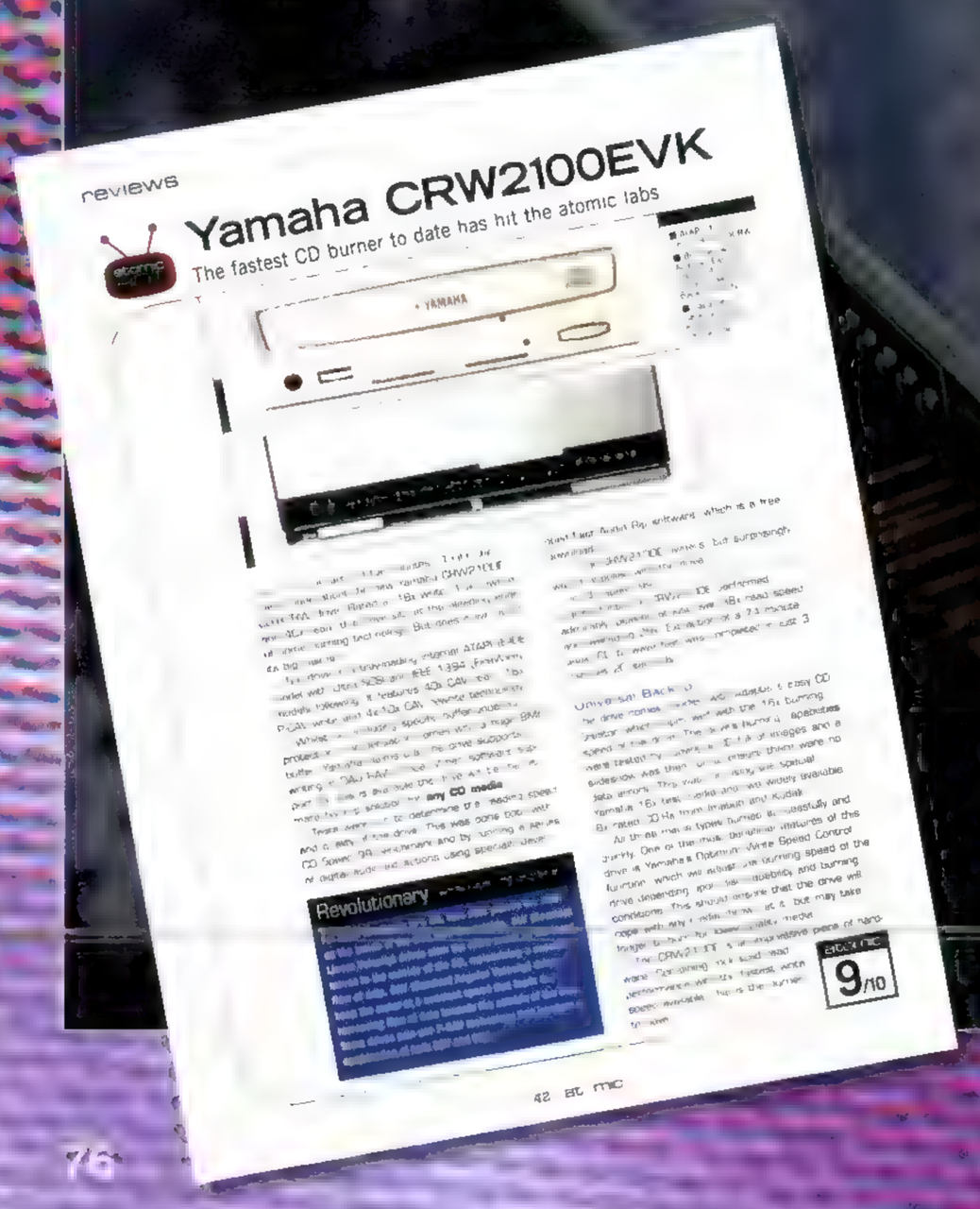
Which came with an at the time rare-as-hen's-teeth GeForce3 card, which had unfortunately been voltage modded into an early grave for a tutorial. The Zippo fuel worked wonders for the cover.

If you look closely you can see that the final image was rotated from its original position, indicated by the components sliding down the card as the solder melted.

Definitely not something you want to try at home. While we weren't experts, we were incredibly crazy, and crazy plus danger always equals the fantastical. Fantastical was the winner's prize obviously – consolation prizes came in the form of third-degree burns and hospital trips and, luckily for us, none of those were given away.

Some covers were fun to do, and for us the most was the immolation of the GeForce3 for issue 10's cover (see *Issue 10* on the cover CD, and zoom in on it for the full glory)

FEELING THE HEAT


reviews

Yamaha CRW2100EVK

The fastest CD burner to date has hit the atomic labs

Revolutionary

9/10

42 atomic

Good reviews are often the subject of press releases – strangely enough though bad reviews never are – from manufacturers, and we have seen several graphs in presentations from one company or another demonstrating success based upon the number of awards given to a company's products. It's an amazing science that makes no sense at all. We did originally want to call *Atomic's* Hot Award the 'Shit Hot Award', however this was canned after a long debate over whether it would actually be seen as credible. In the end we decided to give shit hot products the shortened 'Hot' moniker, much to Ben's chagrin after a second attempt to get 'Far Canal' into the mag.

In the case of one Toshiba notebook review – it got out of hand. Prominently featuring the line 'what we really want is a genital scorcher of a notebook', the model in question impressed us enough to garner a Hot Award. It featured an NVIDIA graphics chip, so it really did have the potential to set one's external reproductive organs alight.

Upon receiving the award, NVIDIA immediately had copies of the review sent to all its partners – a significant chunk of the industry. But nothing prepared us for a meeting in the USA with NVIDIA execs in which one vice president, upon hearing the name *Atomic*, proudly raised one of the notebooks in the air and loudly exclaimed 'You guys just reviewed this didn't you?'

It always amazed us how far the reviews could travel, but we never expected it to go that far. The laptop easily takes the Shit Hot Award for '*Atomic* Review Most Widely Seen'.

The first product to ever win a Hot Award in *Atomic* was Yamaha's CRW2100EVK CD-R/RW, which at 16x burn speed, was the fastest burner we'd seen to date.

GUN CRAZY

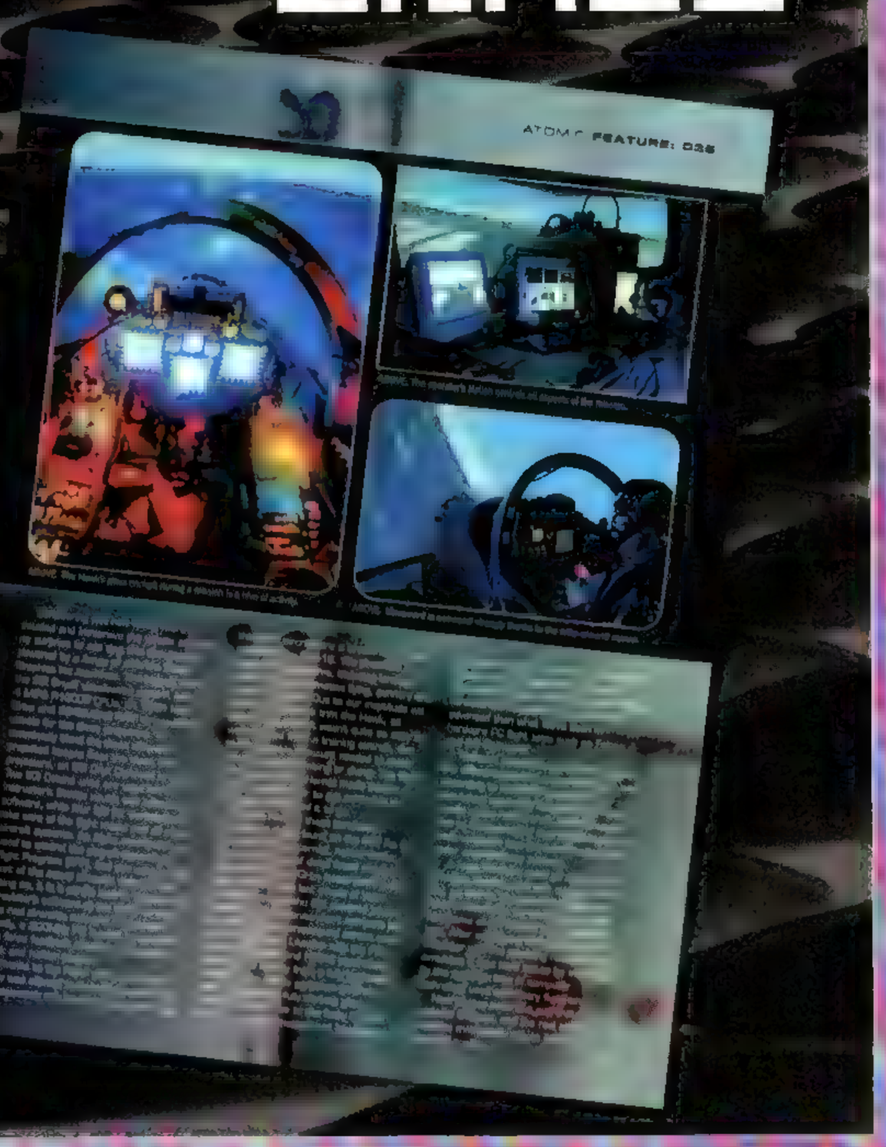
While America's Army may have been the populist way of targeting gamers for military service, the Australian Defence Forces have always been keen to get the geeks excited about job prospects, including stuffing C4 into the bottom of enemy ships using a makeshift submarine and a big iron drill, or hacking into foreign facilities using nothing but a toothbrush and a can of worms. If anyone was up to these extraordinary tasks of ingenuity and insanity, it was Atomicans.

So, to demonstrate the high-tech nature of the Army, we were invited out to Holsworthy in 2002 to check out the special indoor computerised firing range.

The wonderful dovetailing of computer bits and real guns was geek heaven, and while the firing range was simple from a graphical perspective it used common PC hardware and software to create an immersive, interactive training ground. It was a long way from Time Crisis in the arcades, but then since when have you been able to use a Steyr at the arcade?

To follow this up, *Atomic* took a trip in a giant tartan zeppelin to visit the Royal Australian Air Force, to check out its flight simulator hardware. It was, simply put, nothing short of cool.

Both of these visits showed a very different implementation of technology and were responsible in spirit for a lot of the content that went into the magazine later on. It taught us an important lesson, that computing is still cool way beyond the PC level – it isn't just all faceless server rooms and Unix out there in the big wide world.



Even the highest tech solutions use everyday hardware, as we discovered with the RAAF's flight simulators.

WHAT DOES ATOMIC MEAN TO YOU?

READERS FROM THE ATOMIC FORUMS TELL IT LIKE IT IS

Morris: Atomic is ... a community of like-minded people that enjoy pushing their computers as far as they can.

Nich: Atomic = addiction.

NightOwl: For me, Atomic is extreme computing... harder, faster, better... my love affair with a piece of electronic hardware :)

Mink: Atomic is knowing the latest and greatest out there... and finding out how to make it better.

Myra Jan: I am going back a really long time now, but I have never forgotten something that Gramz wrote in a thread as I was a young n00bie and it has summed up Atomic to me ever since. Beyond Belief.

Wallacey: To me, Atomic is the magazine that made the other computer magazines seem redundant.

Juggalo: Insanity in controlled doses.

FAZZ Gundam: The first website you check on the net and the last one you view before you go to sleep at 6am. Atomic is more than a magazine or a site, its a lifestyle choice.

GTAV6: Spending too much time on these forums make you realise that it's a close-knit community of fruitcakes. The fact that every month a handful of them bust a gut to spit out what would have to be one of the world's best performance computing magazines becomes almost a minor side issue.

Lambo: Atomic? He's my friend.

milamer of the assembly: To me Atomic is a diverse community of like-minded individuals that are all working toward a common goal: Geek domination of the world!

keyblademaster Ver.2: Oh, and Atomic has taught a 12-year old how to overclock his AMD Athlon XP 2100+ to 2.2GHz.

Goth: Discussing what cold cathode colour scheme to go for a wedding. That... that is Atomic.

CheekyChops: The community of Atomic is thriving with spirit, its addiction and passion, mixed with a common ground for all... We grow as we learn from each other, we become tighter as we get to know each other, and we stick together as we help one another out, through thick and thin.

Chaos.Lady: Don't believe that anyone can describe what Atomic truly is. The least of it is people. The closest you could come is to say it is half-family, half-cult, half-barroom brawl. A magazine and forum, steeped in dreams and soap opera.
How *Atomic*.

TSarge: ...watching certain editorial staff members systematically destroy all the hardware they'd touch – not mentioning any names. I remember seeing many items suffer 'off the bench' testing – closely followed by a startled oath.

Mills: The magazine... its like a monthly hit of a special desinger drug.

iorek:
» Quote by brains
> OC vs Stargate. :P
i will buy you a beer if that makes it into Atomic.

TheManFromPOST: Because of the magazine, I am broke, I must have the latest gear. Because of the forum, I don't see the sunshine, I am addicted to this online mayhem.

Lenus: Atomic, to me, is a state of being.

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tutorialcontents

Welcome to the all new tutorial section of *Atomic*! In these pages you will find regular hands-on tutorials for Windows, Linux and of course hardware – every month. After all playing with gear, be it hardware or software, is instrinsic to *Atomic*. It's just like stuffing marshmallows up your nose, it's fun even when it hurts. So If you love getting your hands dirty, and delving into everything that makes your PC tick, then you'll find a home with our tutes. And if you have any suggestions for topics you'd like to see, drop us a line on **tutes@atomicmpc.com.au** – *Ed*

tinytweaks

Anti-stutter

Perhaps it's the demands and complexity of modern hardware, but increasingly we're seeing obscure bugs impacting the performance of recently released games on high-end hardware. Largely affecting NVIDIA hardware, the famous Half-Life 2 'stutter' bug also hit players of Everquest II and in some cases World of Warcraft as well. If this sounds like you, surf on over to **downloads.guru3d.com/download.php?det=951** and grab 'PCI Latency Tool 2.0'. Uncompress it, run 'ltcycfg.exe' and look for the entry corresponding to your video card. Many systems have a latency set for the video as high as 248 while other components sit on 32. Users have reported redcued or removed stutter by setting this to 64. Note: this trick won't give you any more FPS, but may reduce stutter by forcing the video card to play a little more fairly with other devices.

Screening processes

Ever found yourself logged into your machine remotely, running some tasks or setting up a game server, and found that when you logout your processes die with the terminal session? Do we have the program for you! What you need is a simple but incredibly flexible tool called screen. All distributions should have a package available if it isn't already installed. Using it is simple: when logged in simply type screen before running the programs you want detached when you log off. When you run it you'll find yourself in the shell, and any program you run will be foreground. However when you're ready you can simply key CTRL-A CTRL-D to detach the screen and its child processes. You can then log out and they'll keep running in the screen session. Perfect for running game servers detached. If you need to re-attach to a detached screen, simply run screen -r

Grease lightning

We've all had our fair share of heatsink replacements and CPU upgrades, and inevitably you end up having to wipe layers of heatsink grease from the CPU and/or heatsink in the process of installing an upgrade. Ideally before applying a new layer of grease both the underside of the heatsink and CPU die should be pristine and clear to ensure the best possible contact. Getting these surfaces properly clean usually requires a cloth and an alcohol based solvent from the hardware store, but there is a quick and easy solution if this isn't available – Zippo Fuel. Yep, you heard right! Zippo Fuel, available at places like 7-11, works wonderfully for removing all sorts of heatsink grease (even Ceramique), and you don't have to worry about wiping it too much beyond the CPU die while cleaning, as any residue evaporates almost instantly. It's cheap, and effective.

Remotely Yours

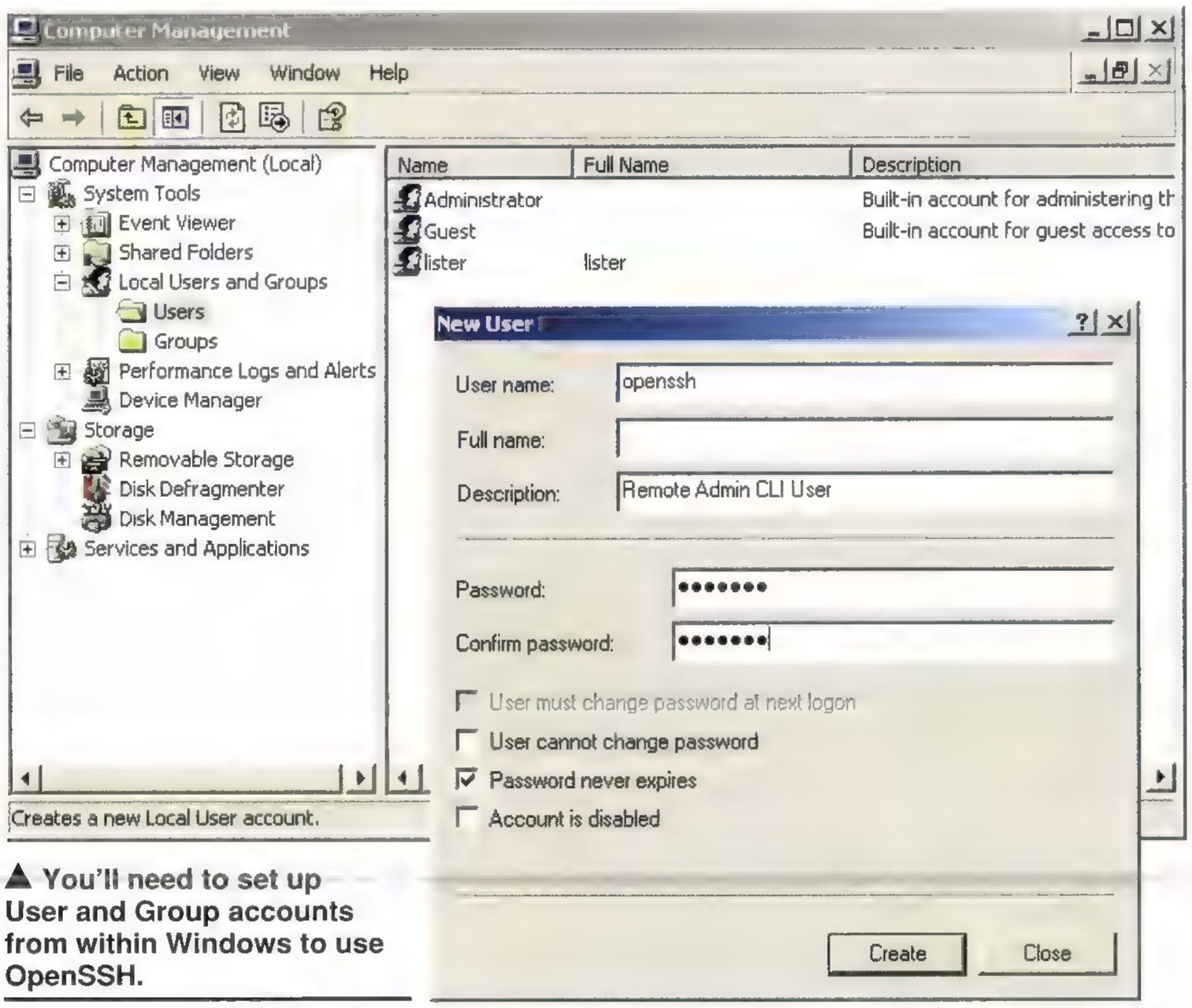
Linux has always been known for its robust remote administration software. **Craig Simms** investigates two free alternatives that bring Windows XP up to scratch.

There comes a time in every geek's life when they discover the need for a second PC. Being the exercise enamoured people that we are, the setup and subsequent networking of the second PC is usually followed by a dire need to administer it – without leaving one's comfy command chair at the main PC.

Cue the networked glory that is remote administration, available to us in both Command Line Interface (CLI) and Graphical User Interface (GUI) forms. Usually one of the strong suits of Linux, it's unsurprising that the Windows tools we'll be looking at this month originated from the land of the penguin.

OpenSSH

We'll start with CLI based applications, in particular, Secure Shell (SSH). Those who remember DOS, or use the Windows Command Prompt will be at home here. There are a few choices in regards to server software, but for functionality and ease of use we'll be using OpenSSH for Windows, a derivative of the Cygwin package which features SSH, Secure Copy (SCP) and Secure File Transfer Protocol (SFTP) modules. Note that you cannot have both OpenSSH and Cygwin installed, as the SSH servers contained in each will clash. For the sake of this tutorial, from now on we will refer to the remote machine we want to connect to as the 'server' and the local machine we'll be connecting from as the 'client'.



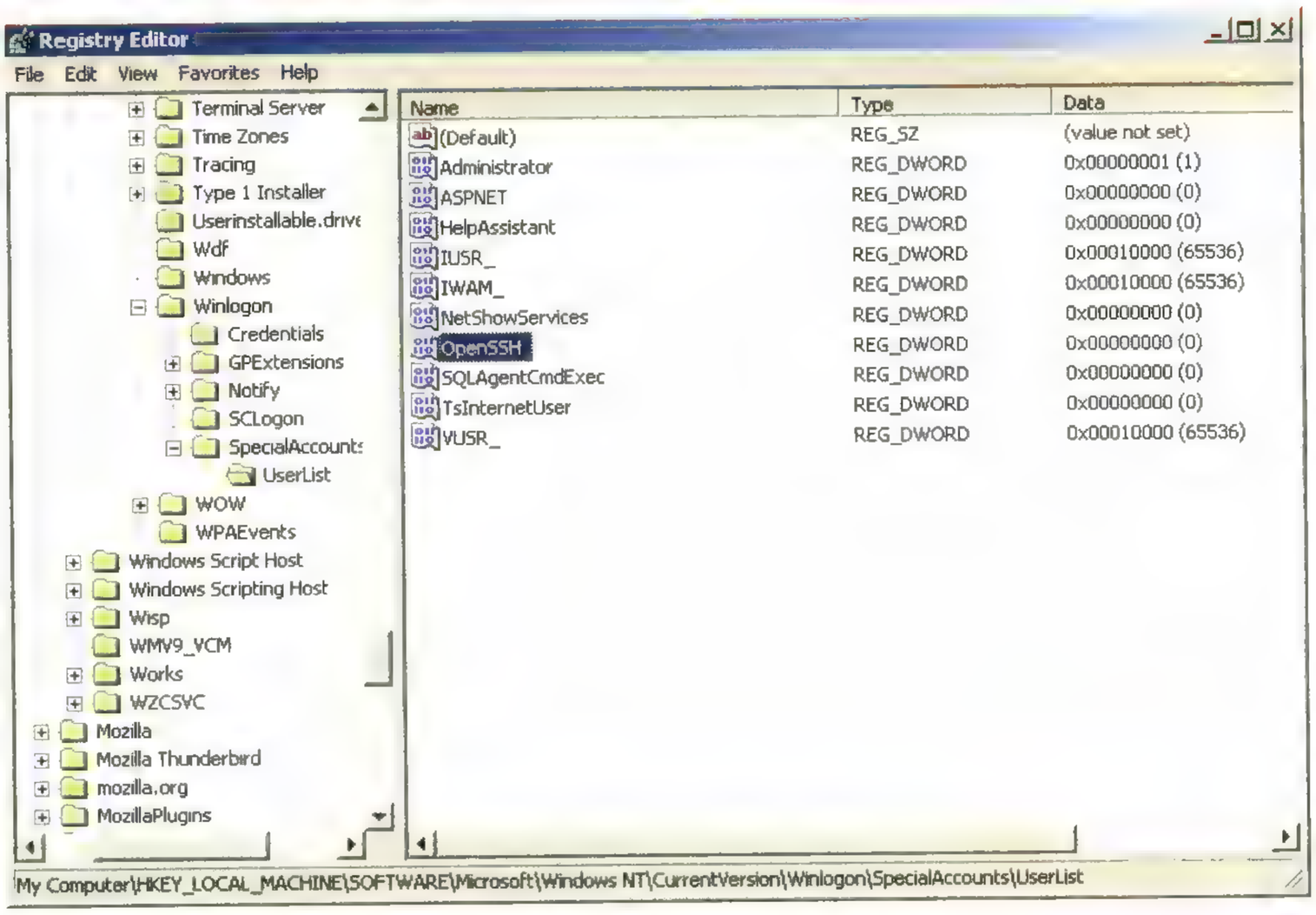
▲ You'll need to set up User and Group accounts from within Windows to use OpenSSH.

1. Login locally to the server using an account that belongs to the Administrator group.

2. OpenSSH uses Windows NT user authentication, so we'll need to set up a new user. Go to Start --> Settings --> Control Panel --> Administrative Tools --> Computer Management --> Local Users and Groups --> Users. Right click on a blank space in the right hand pane and select 'New User'. For the sake of this tute, we've used the username and password 'openssh'. Obviously in practice a more secure combination should be used. Uncheck 'User must change password at next login' and check 'Password never expires'. Click Create and then Close.

   It's also a good idea to create a group specifically for remote users, so Windows security can be more easily applied later. Head to the Groups folder on the left, right click on a blank space in the right hand pane and select New Group. Enter 'OpenSSHG' as the Group Name and click the Add button. Click Advanced and then Find Now, select the user account you previously created and hit OK twice. Hit Create and Close. You have now created the group OpenSSHG with the member openssh. Close the window.

3. Since the account we've created is purely for remote access, the next thing



▲ **Removing the OpenSSH account from the login screen. Security for the win!**

we want to do is remove it from the local login screen. Start the Registry Editor by going to Start --> Run, then type 'regedit' and hit OK.

Browse to HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Winlogon\SpecialAccounts\UserList, right click in a blank part of the right hand pane and select 'New --> DWORD Value'. Name it 'openssh' – the value should already be set to 0. The openssh account has now been removed from the login screen and User Accounts control panel. If you want to re-add it, either double click the appropriate entry and set the 'Value' data to 1, or simply delete the DWORD value entirely. When you're finished, close regedit.

4 Download and install OpenSSH (see the Web Links sidebox). Once the installation has finished, open a Command Prompt window and navigate to the binary subdirectory where you installed OpenSSH (default 'C:\Program Files\OpenSSH\bin'). Now we need to import the local user groups for OpenSSH to use. Type:

```
mkgroup -l >> ../etc/group
```

Where '-l' lists all local user groups, and '>> ../etc/group' appends the list to a file named group (creating it if it doesn't exist) in the etc subdirectory. Now we want to add our user. Type the following

```
mkpasswd -l -u openssh >> ../etc/passwd
```

Where '-u' indicates a username follows. If you've used a different username, replace the openssh above with the appropriate entry.

5 Go to Start --> Settings --> Control Panel --> Administrative Tools --> Services. Find the OpenSSH server service, and start it.

6 When logging in to your OpenSSH box, the program will attempt to dump your user into the default directory defined by the 'passwd' file. This is set as the user's home directory, /home/openssh.

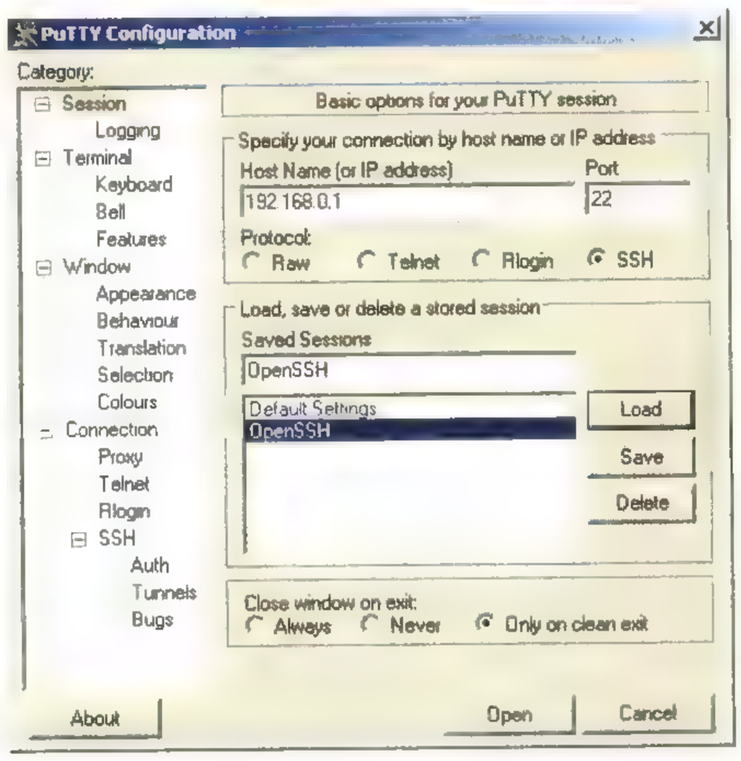
By default Cygwin (and as a consequence, OpenSSH) defines the alias '/home' as 'C:\Documents and Settings' (or wherever the Documents and Settings folder is), so when your newly created user first logs in, OpenSSH will actually try to start the session in C:\Documents and Settings\openssh. Unfortunately this directory doesn't yet exist – usually it's created automatically when the user first logs in to Windows. For the sake of speed, simply create the folder manually through Windows Explorer instead. But what if you don't want the user to start in their home directory? Easy. Open the passwd file (found in the etc subdirectory off where you installed OpenSSH), in a text editor that respects native formats, such as UltraEdit or Crimson Editor. Near the end of the first line, you'll notice the string '/home/openssh'. This is what sets the default login directory. You'll notice the format is slightly different from the Windows standard, as it uses the Linux standard of forward slashes in preference to back slashes to denote directory levels. Furthermore, if you wish to represent a drive letter, the syntax to use is as follows:

```
/cygdrive/driveletter
```

So if you wanted the user to be dropped into C:\ when they logged in, you would set the default directory to:

```
/cygdrive/c
```

7 Time to test the connection. Go to your client machine and install and then run Putty. Enter the appropriate IP, port (22) and select the SSH protocol. Select Terminal --> Keyboard from the left hand tree and change the 'Backspace Key' to Ctrl-H. Select Terminal --> Features from the left hand tree and check 'Disable application cursor keys mode' and 'Disable application keypad mode'. This will ensure the backspace, arrow and numpad keys will work properly. Select Session from the left hand tree, enter a



▲ **Logging into the machine, putty style.**

Sshecurity

When you login through SSH for the first time, you may find that you'll either have full access to your files, or read/list access only. You may even have a combination of both situations. The most likely reason for this disparity is Simple File Sharing.

In a standard Windows install, all local users are part of the Everyone group, whether explicitly stated or not. If you've used Simple File Sharing to share a hard drive and allowed network users to change your files, then the Everyone group, and consequently your SSH user, will have been granted write access to those files that have been shared. Obviously this is a security risk. Thankfully there are two ways we can address the issue.

Windows Hardening

If we want to restrict a user effectively, we'll first have to disable Simple File Sharing, which can be found at the bottom of Tools --> Folder Options --> View in Windows Explorer.

Next we need to right click on any sensitive folders (it's a good idea to do it from the drive level down), and choose Properties, then the Security tab. Select the Everyone group and apply appropriate permissions (you'll want to either restrict to read/list access only, or remove the group altogether). You can also add the OpenSSHG group, or even individual users to particular folders and give them write permission wherever you see fit.

For greater control, check out the Effective Permissions tab when you hit the Advanced button. This should keep any determined hacker's potential damage to a minimum.

RSA Keys

But what if you want the account (or indeed, another account) to have administrator access? The once off password authentication is a little scary, and unlike Linux, there's no way (that's free, isn't broken, or works through a remote terminal), to login to a restricted account, then switch over to an administrator account. Your user is either neutered, or not.

The answer? RSA authentication. This security format involves two files – a public and a private key. The public key sits on the server, and acts like a lock in a door. Only the right private key will fit, and unlock the door to let you into the server. You can also set a passphrase on the private key, further enhancing your security. Sounds good, let's do it!

1 On the server, open up 'sshd_config' from the 'etc' subdirectory. Set the arguments as follows:
StrictModes no
RSAAuthentication yes
PasswordAuthentication no

2 Save the file, then go to Start --> Settings --> Control Panel --> Administrative Tools ---> Services. Find the OpenSSH Server service, and restart it.

3 Browse to the user's home directory using the Command Prompt (in this case, C:\Documents and Settings\openssh) and create a directory called 'ssh' by typing: **mkdir .ssh**

(Windows Explorer will not create folders preceded with a dot).

4 Create a text file called 'authorized_keys' (note the lack of extension) within the .ssh directory.

5 Open Puttygen (see web links sidebox for download) on the client and click the Generate button. Follow the instructions until a key is generated. Make sure to set a passphrase, and add a descriptive comment (a username is good). Copy the public key displayed in the box into the 'authorized_keys' file that you just created on the server – it should appear on one line.
Note that for multiple users, every user's home directory must contain its own 'authorized_keys' file, containing their own public key.
You will also have to add any new users to the 'passwd' file.
Save the file, go back to Puttygen and click Save private key. You may also wish to save the public key for future use.

6 Open Putty, Load your previous session and choose SSH --> Auth from the left hand tree, then click Browse. Select the private key you just saved, save your session and connect to the server. If everything went well, you should be asked for your passphrase when you login.

7 Well done! Your OpenSSH server is now secure. For portability, copy your private key and Putty to a USB key, and take your login with you.

name into the Saved Sessions field and click the Save button. Then click Open – if everything goes well, you should be presented with a screen prompting you to login. After you successfully login, you should be greeted with the familiar Windows Command Prompt. Congratulations, your machine is now SSH ready!

CYGWIN

Essentially the 'father project' from which OpenSSH is derived, Cygwin is an API which produces a Linux-like environment, handily containing ports for many of the native Linux commands and tools. If you're looking to expand the usefulness of your CLI based remote administration on Windows, check out **www.cygwin.com**

Virtual Network Computing (VNC)

The GUI based VNC allows a user to connect to a remote computer and control its desktop through their own mouse and keyboard. It spans across several platforms and exists in many different flavours.

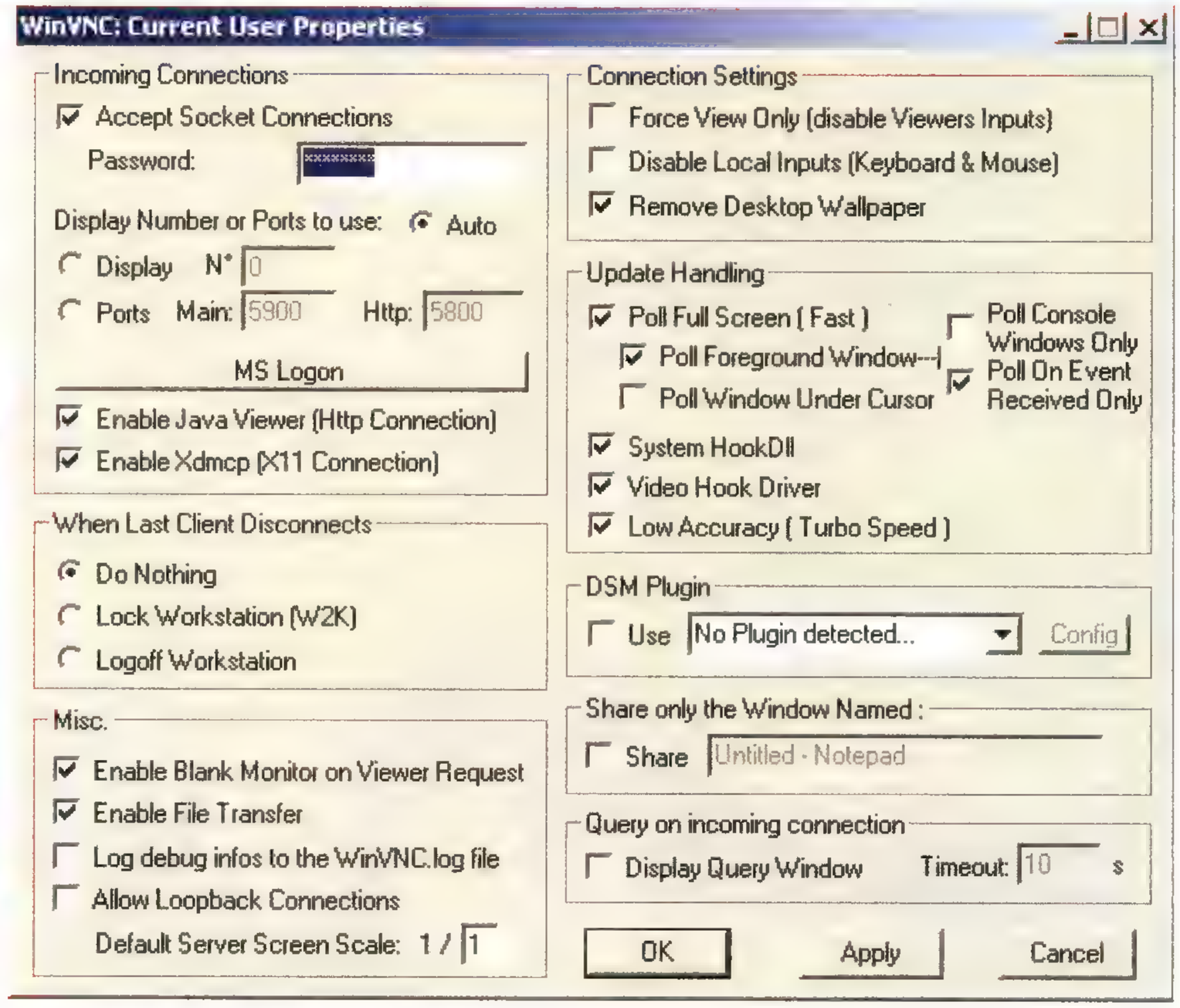
For Windows users, the distribution of choice is UltraVNC, for three reasons – speed, Windows NT Authentication, and the ability to share a specific window only. The UltraVNC client will also happily connect to any other VNC server (even on another platform like Linux), although this will inevitably limit your feature set.

UltraVNC is a cinch to set up – simply run the installer on the server machine, deselect the viewer component and elect to have it register and start as a system service.

If you wish to install the updated video hook driver (which will likely give you an extra speed boost), download and extract it, open a Command Prompt window, browse to the appropriate folder and type:

```
setupdrv install
```

Eventually you will be advised that the driver has been installed, and you'll need to restart the machine. Once you're back in Windows you'll notice you have a new icon in your system tray. Right click on it and choose Properties to get access to the options dialogue.



▲ The ServerVNC Properties window. More options than a window full of properties!

A few definitions now – polling refers to the method the software uses to scan the screen and check for updates. If you're connecting over LAN it's most likely you can poll everything, whereas if you're connecting over the internet, you may wish to turn some of the options off to reclaim speed. The DSM plugin simply allows extra encryption on the connection if required. XDMCP allows *nix X clients to connect remotely (although the feature is still considered experimental), and hooks are optimised methods used to track common changes (like effects or button presses) without having to poll for them. The rest of the options should be self explanatory, so feel free to tweak to your liking.

Run the install again on the client machine, making sure to deselect the server component. Like the server, the viewer can also be tweaked for speed increases, but for the most part you'll find the 'Auto' setting up to the task. Enter the IP of the machine you want to connect to into the VNC Server field, hit connect, and assuming all is right, the remote machine's desktop should appear on your screen.

You can also access the remote machine from your web browser. Note that at the time of writing, if you enforce NT Authentication (known as MS Logon in the Properties dialogue), you won't be able to use the web-based Java viewer as it doesn't support username entry. The next version should fix this. To access the Java viewer, simply open your web browser and type:

```
http://[server's IP address]:5800
```

Note that you can change the port through the Properties dialogue of the server.

Let Our Powers Combine

Let's do something really cool and add that final bit of extra security to our VNC connection by using a rather nifty and cool feature of SSH – *tunnelling*.

Firstly, you'll need a loopback network adapter correctly installed. The easiest way to check this is to open a Command Prompt window and type: **ping 127.0.0.1**

If you don't get any timeouts, you're in business! If you do, refer to the appropriate link in the 'Further Resources' sidebox.

Open the VNC Properties dialogue, and select 'Allow Loopback Connections'. Click OK. Now we want to deny all external connections to the VNC server (as we'll effectively be connecting locally through

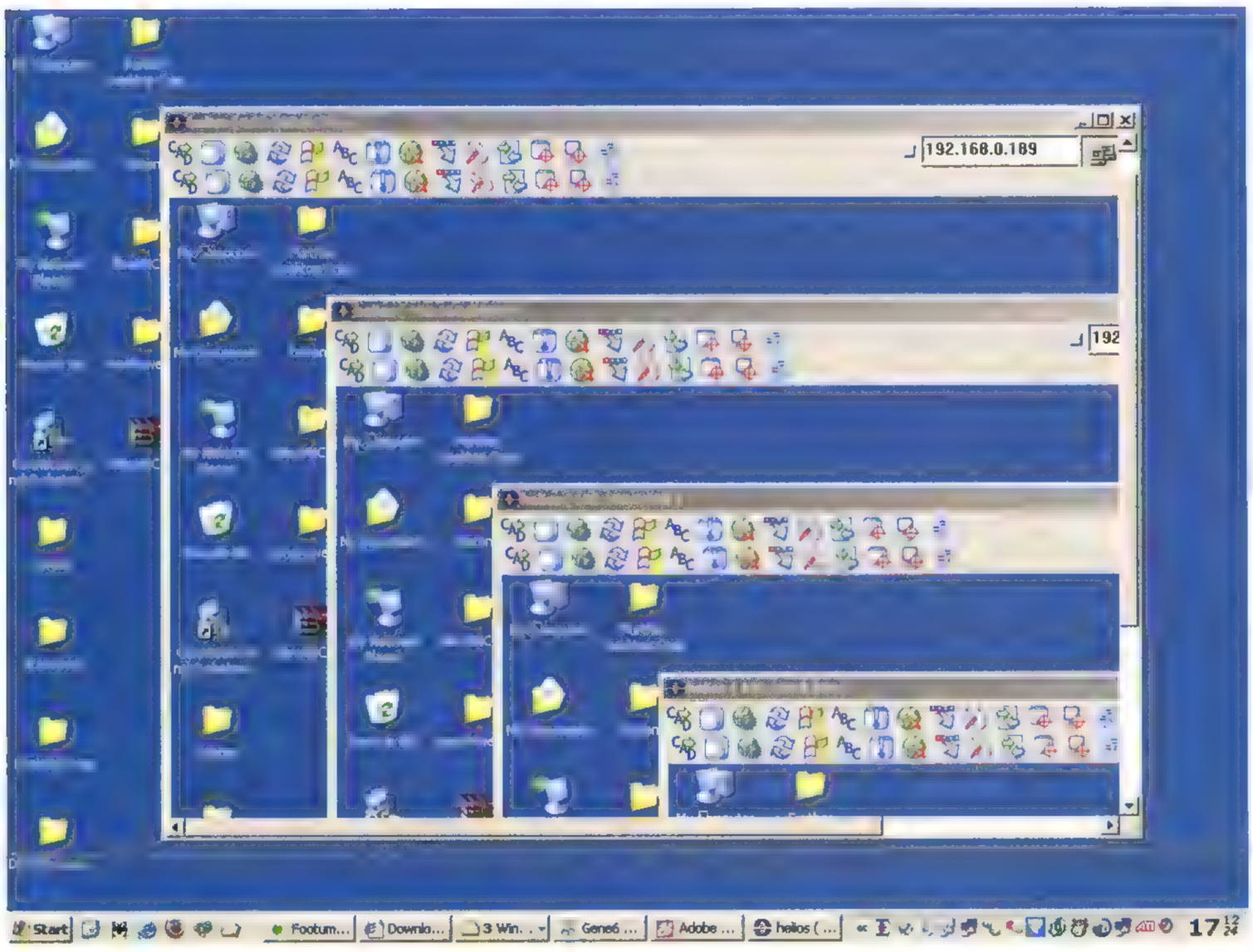
▲ **You can even control a desktop through your web browser.**

the tunnel). Open Regedit, and browse to HKEY_LOCAL_MACHINE\Software\ORL\WinVNC3. Create a DWORD Value called 'LoopbackOnly' and set it to 1. Close the VNC server by right clicking on the tray icon and choosing Close VNC. Restart it through the Start menu.

Open up Putty on the client machine, and load your previously created SSH session. Select SSH --> Tunnels from the left menu tree, and enter a source port of 5900, a destination port of 127.0.0.1:5900, and hit the Add button. Save the session, and login to your SSH server.

Open the UltraVNC viewer and connect to the IP 127.0.0.1. You're now running an SSH RSA VNC server. Welcome to the wonderful world of remote administration!

▼ **Hall of mirrors – networked desktops to infinity!**



FURTHER RESOURCES

OpenSSH
www.openssh.com

Setting up OpenSSH on Cygwin
pigtail.net/LRP/printsrv/cygwin-sshd.html

Free SSH & SCP for Windows
www.jfitz.com/tips/ssh_for_windows.html

WinSCP
winscp.sourceforge.net

RealVNC Documentation
www.realvnc.com/v4/winvnc.html

TightVNC
www.tightvnc.com

Installing a Loopback Adapter in Windows XP
support.microsoft.com/default.aspx?scid=kb;en-us;839013

The following software is used in this tutorial:

Crimson Editor 3.70
www.crimsoneditor.com

OpenSSH for Windows 3.8.1p1-1
sshwindows.sourceforge.net

Putty + Puttygen 0.56
www.chiark.greenend.org.uk/~sgtatham/putty

UltraVNC R18 + Video Driver
ultravnc.sourceforge.net

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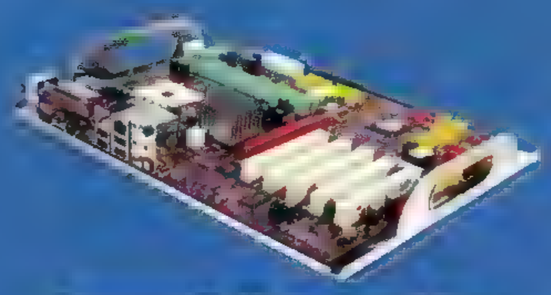
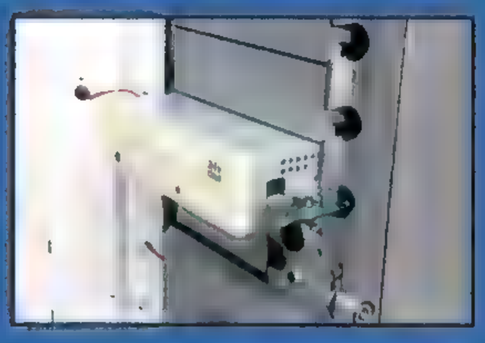
Inside Structure



Removeable Motherboard Tray



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A bit on the side

Leigh Dyer introduces the high-performance world of Linux on AMD's 64-bit CPU architecture.

The AMD64 architecture has really put the pressure on Intel. The Athlon 64 is pretty widely acknowledged as the best chip around today for gaming, and the server-oriented Opteron is kicking butt as well. It's about more than just performance though -- AMD64 moved Intel's x86 architecture to 64-bit in a way that Intel themselves refused to do, and did such a good job that its left Intel busy playing catch-up.

But what exactly is the point of 64-bit, and what does it mean for Linux?

It's all in the bits

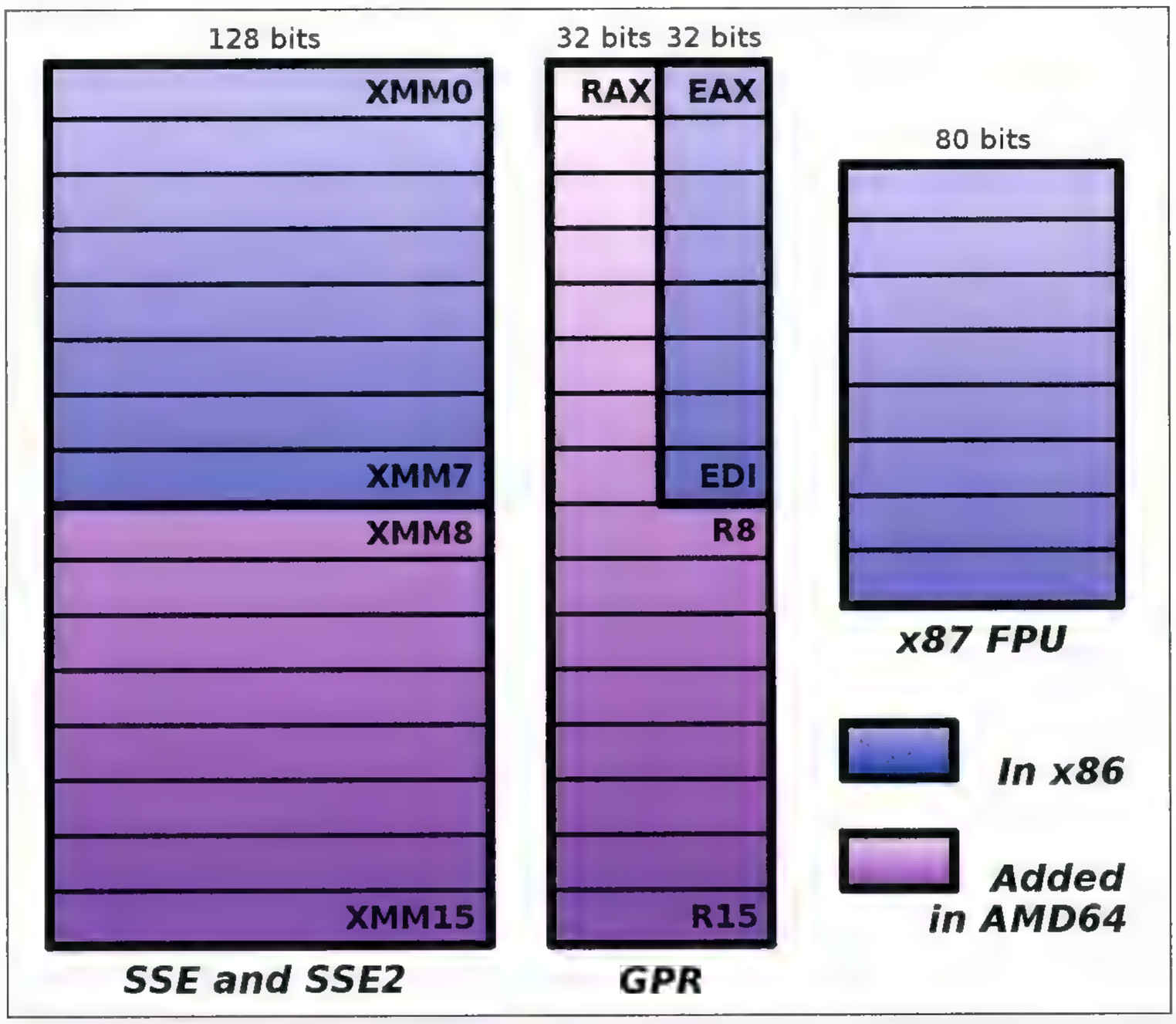
The 'bitness' of a CPU isn't a strictly defined property, but it usually relates to the size of the values the CPU can deal with directly. This can boost performance if you're dealing with numbers too large to fit in the smaller registers, which is exactly what happened when the 80386 moved the x86 family from 16-bit to 32-bit.

More importantly, the bitness affects the amount of RAM the system can address. 32-bit CPUs like the Pentium 4 and Athlon XP have a 32-bit address space, which (barring some semi-useful hacks) limits the RAM in a PC to a maximum of 4GB. I'm sure that seemed like a lot back in the early '90s, but high-end servers have been pushing past that for quite some time, and many desktop and workstation users are starting to feel the pinch now too.

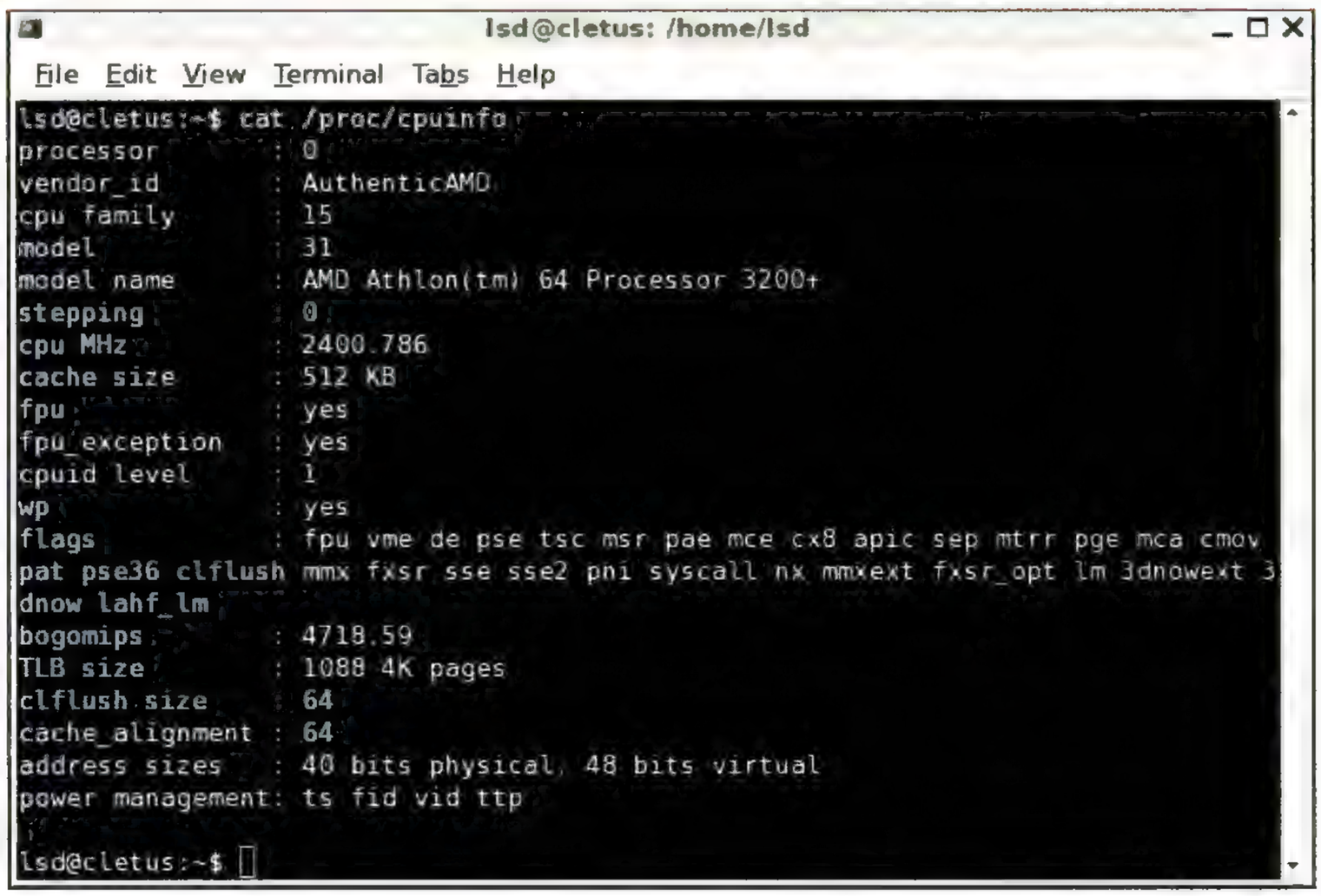
Enter AMD64

When AMD designed the AMD64 architecture they made several key changes to the CPU, including extending the existing GPRs from 32-bit to 64-bit, and adding new instructions to handle 64-bit values. The address space is also expanded to 40 bits, for a limit of 1TB of RAM, with the option of extending that further in the future. AMD64 also adds more registers, doubling both the GPRs and the SSE registers. Interestingly, the x86 floating point unit is left untouched – compilers and developers are urged to use SSE for floating point operations instead.

▲ The Athlon 64: Champion of the PC enthusiast.



▲ AMD64 extends existing registers and adds a bunch of new ones, though the tired old x87 FPU is left untouched in favour of SSE.



▲ **Good ol' /proc/cpuinfo on an Athlon 64.**

More than 4GB of RAM is still overkill for most of us though, so the question remains: why go 64-bit today? If you're like us, that's a stupid question – AMD64 is shiny and new, and that's more than reason enough. The extra registers and other architectural clean-ups do provide a good reason to play with AMD64 though: greatly improved performance.

Linux on AMD64

To realise this promise of extra performance, you need to use a 64-bit OS in conjuction with an AMD64 based system. And for this, there's no better choice than Linux. With the source available to all of your everyday applications, the whole system can be recompiled for AMD64, reaping the full benefit of the architectural improvements.

You can also put together a 32-bit compatibility environment to run binaries that haven't or won't be ported to AMD64: good examples include games, WINE (which only runs on x86), OpenOffice.org, and Firefox. Firefox itself is fine in 64-bit, but you'll need to run a 32-bit Firefox to use closed-source 32-bit plug-ins.

The only really important limitation of a 64-bit Linux system is that while 32-bit applications can be loaded, 32-bit drivers can't, so you have to be careful with binary-only drivers. NVIDIA have AMD64 versions of their video and motherboard drivers, but ATI and most other vendors don't yet, and hacks like 'ndiswrapper' also won't work. Just about every piece of hardware supported by open-source drivers should work fine, though.

Many distributions now have an AMD64 port, but their organisation can be quite varied, particularly when it comes to the way they handle 32-bit compatibility. The core issue with running 32-bit applications is that you can't mix 32-bit and 64-bit code in a single app, so to run 32-bit applications, you need a complete set of 32-bit libraries – everything from glibc through to the X, SDL, and OpenGL libraries. There's a semi-standard for this, adopted by distributions like Fedora, that seperates libraries in to lib and lib64 folders. This works well for simple things, but can easily become messy.

Debian and Gentoo have taken a different approach. Because they both package so much software anyway, they've decided to throw away 32-bit compatiblity in the core OS. Everything looks just like a regular system, with all of the libraries in the 'lib' folders, but it's all pure 64-bit code, with no real provision for 32-bit compatibility.

They do offer a very neat way of handling 32-bit applications though – a 'chroot' environment. A chroot basically lets you reassign the location of the root directory for a certain application, preventing it from accessing any files beyond the chroot. This is often used to keep potentially exploitable server applications locked away from sensitive parts of your filesystem, but Debian and Gentoo use it to build a 32-bit environment inside your 64-bit system.

Installing Debian-AMD64

While Gentoo is truly hardcore, the vast scope of its configurability when it comes to installing it would make for a specialised Atomic handbook, so instead we're going to show you how to get a 64-bit Linux up and running quickly and easily by using Debian.

The AMD64 port of Debian is an official port of Debian's unstable distribution, called 'sid'. Don't worry too much about the fact that it's not yet official – it's built alongside the official versions of sid, so the selection and available versions of packages are virtually identical to the standard i386 distribution.

Follow these steps to install Debian-AMD64:

1. Download and burn a network install CD. This contains the Debian installer and kernel, and a selection of base packages. Other packages will be installed via the internet. Grab the CD image from the following URL

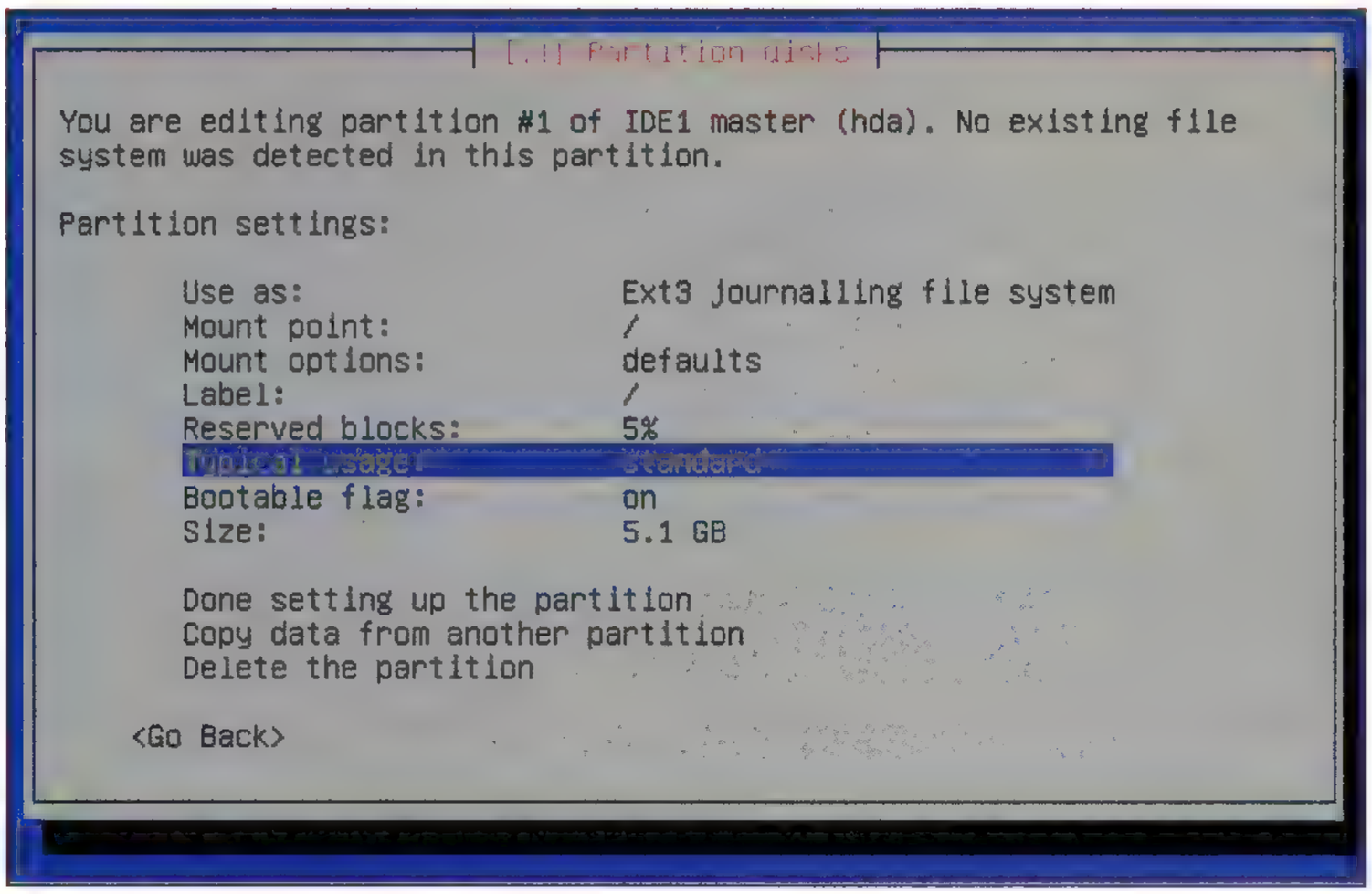
   http://debian-amd64.alioth.debian.org/install-images/sid-amd64-netinst.iso

2. Boot the CD and run through the installer. Debian's installer is still text-based but it's relatively easy to use. After partitioning, the base packages and boot loader will be installed.

3. Once the installer has finished, reboot in to your new Debian system and run through the initial configuration wizard. This includes setting the root password, creating your user account, and selecting which packages to install.

   When the time comes to select where to install packages from, select the 'http' method, and then 'enter information manually'. Enter 'debian-amd64.alioth.debian.org' as the mirror hostname, and '/pure64' as the mirror directory.

4. Select which packages you'd like to install. You can enter manual package selection if you've got a few days to spare, but it's probably best to just enable the 'Desktop environment'



▲ **Debian's text-based installer is powerful and (relatively) easy to use.**

package set and leave it at that. More packages can be installed later with

apt-get

5 The selected packages will be downloaded and installed, and you'll be prompted for any configuration options they might need. Once complete, you'll be able to log in to a text console. Install any other packages you might like – some good starting points would be 'x-window-system-core', to get a working X server, and either 'gnome' or 'kde' to install these desktop environments.

To install packages, use **apt-get** like so:
apt-get install x-window-system-core

And that's it! Debian's extensive library includes 64-bit versions of pretty much everything you'll need, which makes using 64-bit Linux a breeze.

32-bit compatibility

If you want to install 32-bit compatbility the easiest way is to install the 'ia32-libs' package. This installs a base set of x86 libraries, including glibc and basic X libraries – enough to run a number of applications, including games like Quake III and Doom 3.

If you want more complete 32-bit compatibility, you'll need to install a 32-bit chroot environment. Follow these steps to get started:

1 Use apt-get to install the debootstrap package, which lets you install a new Debian system from inside an existing system. Once it's installed, run the following command to start the chroot installation:

mkdir -p /var/chroot/x86
debootstrap --arch i386 sid /var/chroot/x86 ftp://mirror.pacific.net.au/debian

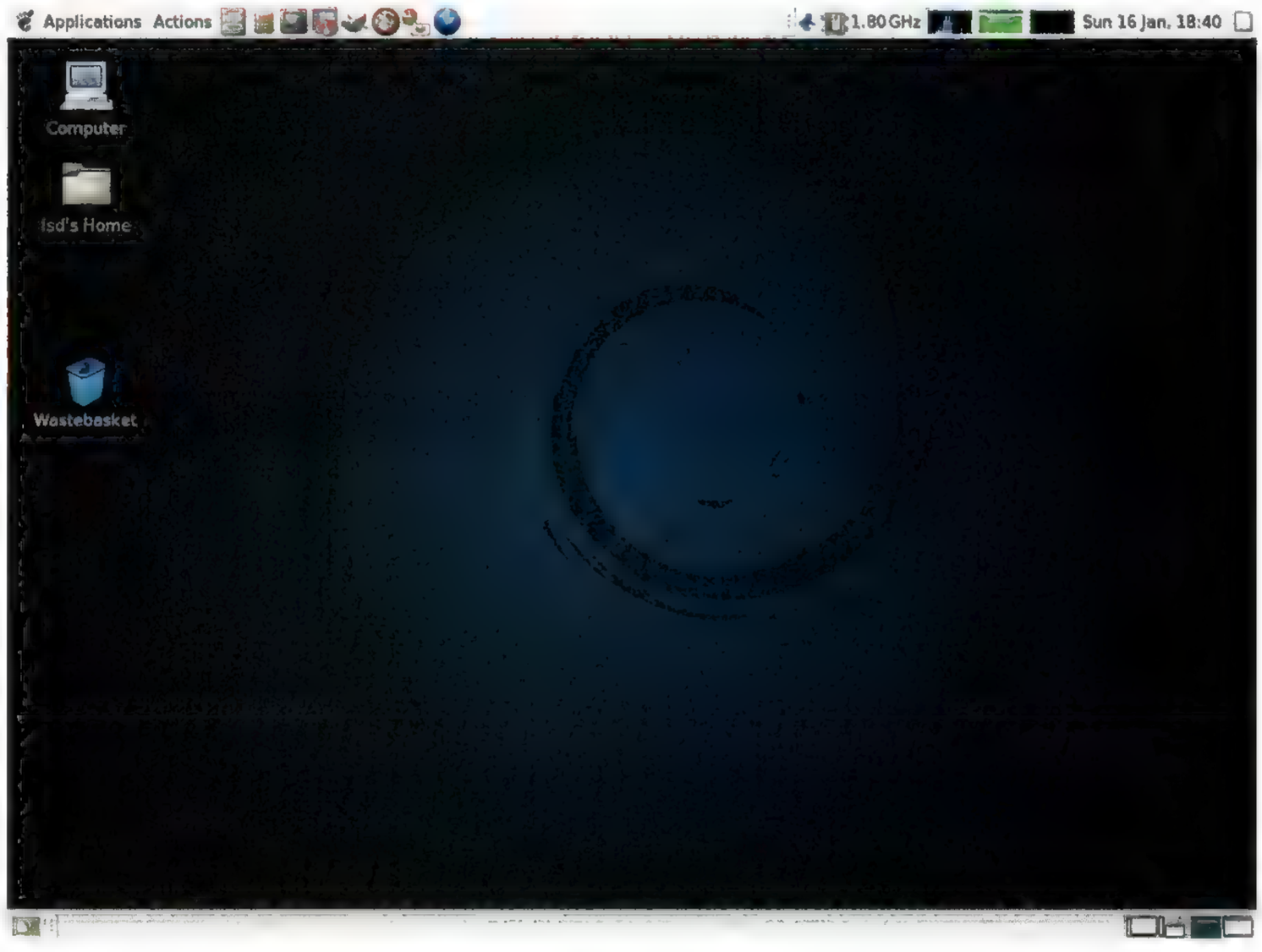
debootstrap will begin downloading the Debian i386 base packages, installing them in to your chroot directory. This pulls down quite a few packages, so it can take a while to complete.

2 Enter the chroot and run a few test programs to make sure everything has been installed correctly, like this:

chroot /var/chroot/x86

Your shell should change to show that you're now in the root ('/') directory. This shell is locked entirely inside the chroot, so you can't access any files outside of the /var/chroot/x86 directory on your real system. There's a full compliment of basic shell programs installed, so run a few ls commands to make sure verything's in order. Exit the chroot with the **exit** command, or by hitting Ctrl-D.

3 Enable access to key directories on your system from inside the chroot. Specifically, you'll need '/tmp' and '/proc' for various applications to function properly, and you'll probably want your '/home' as well. /proc can be mounted directly, but for /tmp and /home, we use bind mounts, which simply mirror the contents of the real directory. Add these lines to your '/etc/fstab' file:



▲ **Mmm... the beauty of a 64-bit Debian Linux desktop!**

```
/home/var/chroot/x86/home none bind 0 0
/tmp /var/chroot/x86/tmp none  bind  0 0
proc /var/chroot/x86/proc proc  defaults 0 0
```

4 Copy your user database files over to the chroot. Without these, the chroot won't know who the users on your system are, and you'll get numeric user IDs showing up rather than usernames.

```
cd /etc
cp passwd group shadow /var/chroot/
x86/etc
```

Your chroot is now complete. Enter it as root with the chroot command as before, and then you should be able to switch to your regular user account with the su command. You can now use **apt-get** to install any x86 packages you might want or need.

5 To make running applications inside the chroot easier, install the 'dchroot' package. This lets you define chroot environments, and allow direct access to them from standard user accounts. After installing the package, edit the '/etc/dchroot.conf' file and add the following line:

```
x86 /var/chroot/x86
```

You can now run applications inside the chroot using the **dchroot** command

```
dchroot -c x86 -d mozilla-firefox
```

6 For some programs, notably games, that you probably don't want or need to install inside the chroot, it's enough to simply make the libraries inside

Cool'n'Quiet

Modern desktop CPUs put out a staggering amount of heat. For the Athlon 64, AMD built in a version of their PowerNow laptop speed throttling technology, which they call Cool'n'Quiet. Cool'n'Quiet clocks the CPU down to as little as half of its maximum clock speed, reducing the heat output and saving power.

Under Linux, CPU frequency scaling is handled by a system called *cpufreq*, which contains drivers for PowerNow (and hence Cool'n'Quiet) and Intel's similar SpeedStep technology.

Once the driver is loaded, you can tweak the CPU speed by playing with some files in the /sys filesystem, or by using a tool like the GNOME cpufreq applet. Typically though, a better idea is to run a small daemon that monitors the system activity and automatically adjusts the CPU speed to match.

Follow these steps to throttle your Athlon 64 down when it's idle:

1 Enable cpufreq and the powernow-k8 kernel driver. If you're compiling a kernel, look under 'CPU Frequency scaling' in the 'Power mangement options' section. The options you want are the 'userspace governor' and 'AMD Opteron/Athlon64 PowerNow!'. They can be built as modules, and they may well be on your system, so try loading the 'cpufreq_userspace' and 'powernow-k8' modules.

2 Try tweaking the CPU speed manually. Under '/sys/devices/system/cpu/cpu0/cpufreq/', get the current CPU speed by reading the contents of 'scaling_setspeed':

```
cat scaling_setspeed
```

To change the speed, use echo to write to this file:

```
echo 1000000 > scaling_setspeed
```

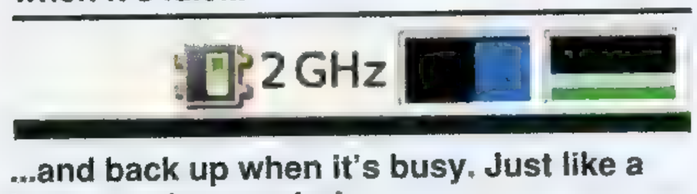
Check the contents of the file to make sure your changes stick.

3 Install an automated CPU throttling daemon. For Athlon 64 chips, a favourite is a tool called 'powernowd', though you can use any cpufreq-compatible daemon. powernowd is in both Debian and Gentoo – simply install the package, and start it up:

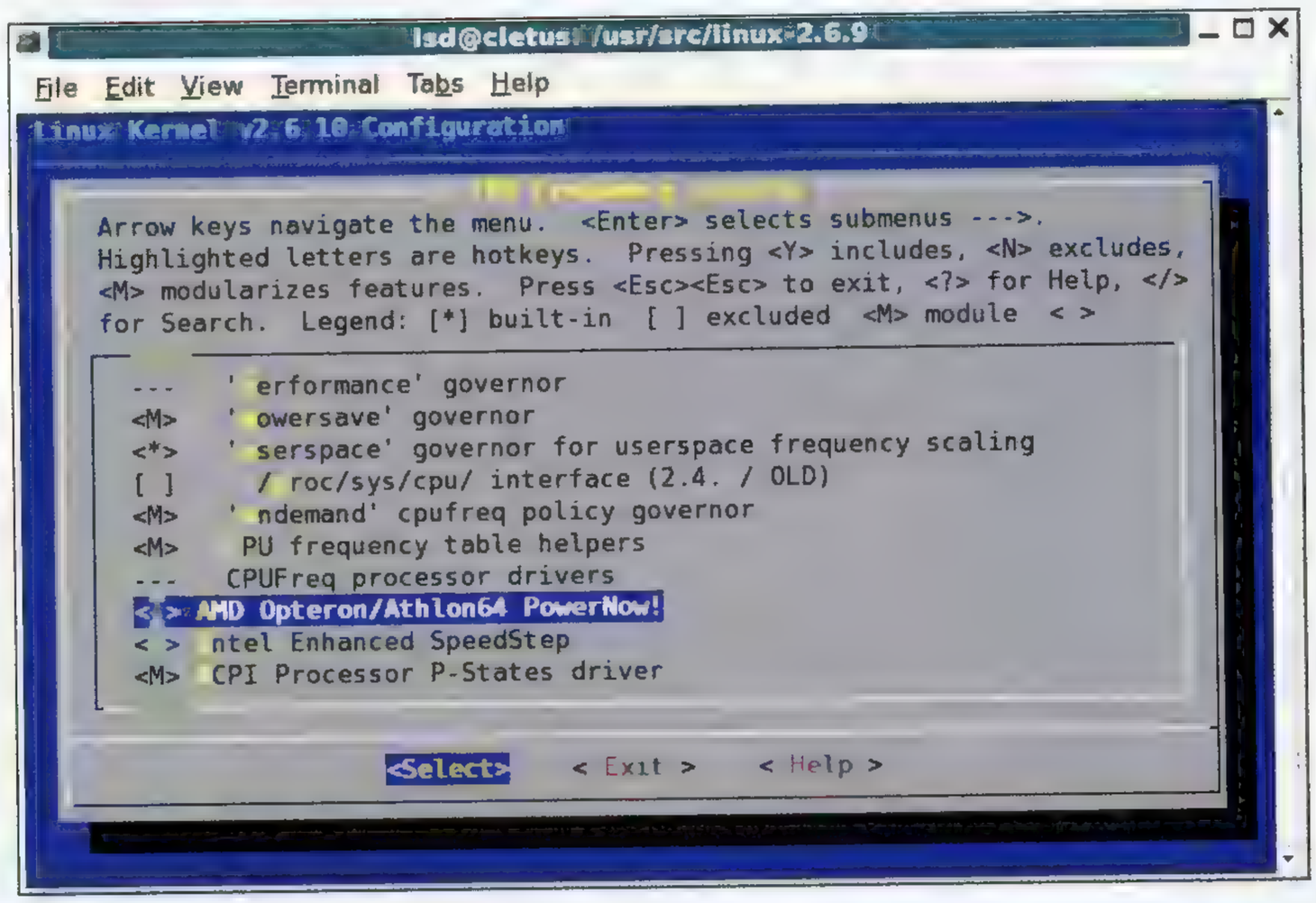
```
/etc/init.d/powernowd start
```

4 If you'd like to keep an eye on your CPU speed, it's a good idea to install a monitoring application, such as the GNOME **cpufreq** applet, which is packaged in Debian (gnome-cpufreq-applet), though there are monitors for KDE and GKrellM as well.

cpufreq can clock the Athlon 64 down when it's idle...



...and back up when it's busy. Just like a laptop, only crunchy!



Enable the userspace governor and Athlon64 PowerNow! support in your kernel.

the chroot available to the rest of your system. To do this, symlink the 32-bit dynamic linker in to your /lib folder:

```
cd /lib
ln -s /var/chroot/x86/lib/ld-2.3.2.so ld-linux.so.2
```

Tell the dynamic linker where to find the 32-bit library files by adding these lines to your '/etc/ld.so.conf' file:

```
/var/chroot/x86/lib
/var/chroot/x86/usr/lib
/var/chroot/x86/usr/X11R6/lib
/var/chroot/x86/usr/local/lib
```

Finally, update the dynamic linker's library cache with the **ldconfig** command.
With the 32-bit libraries added, you should be able to run most 32-bit binaries directly from your 64-bit system.

When you run a binary, the kernel and dynamic linker are smart enough to work out what 'bitness' it is, automatically linking it to the matching libraries.

If a program you're trying to run needs a library that you don't have installed, enter the chroot and install the appropriate package. Be sure to re-run **ldconfig** on your real system afterwards.

Conclusion

Linux on AMD64 is clearly a powerful solution that gives you the best of everything that's available today: full 64-bit support, the performance boost that the AMD64 design brings, and solid backwards compatibility for your older applications. And Linux, of course, which is simply plain cool. If you've invested in an AMD64 CPU, you might as well use it to full advantage!

The AMD64 edge

While the ability to perform 64-bit math directly is of little benefit to most programs, the extra registers and other improvements in the AMD64 architecture do improve performance in a number of applications. To get an idea of the potential performance boost, we compiled 32-bit and 64-bit binary versions of a number of applications and compared their performance.

Lower is better	32-bit	64-bit	Margin
Lame 3.96.1	226.9	230.8	98.3%
FAAC 18102004	143.7	116.7	123.1%

Content creation

For the Lame and FAAC tests, we measured the time taken to encode a large WAV file. FAAC, an open source AAC encoder, shows an impressive boost in 64-bit mode, encoding the 50 minute file in under 2 minutes. Lame shows a small drop in performance, but this is due to the x86 version having some hand-optimised assembler code for key parts of the encoding. Once this code is ported to AMD64, we should see a good performance boost.

Lower is better	32-bit	64-bit	Margin
BZIP2 1.0.2	65.6	54.3	120.8%

Bzip2, the famous compression tool, was used to compress an uncompressed Linux 2.6.9 source tarball. The 64-bit binary enjoyed a significant performance gain.

3D rendering

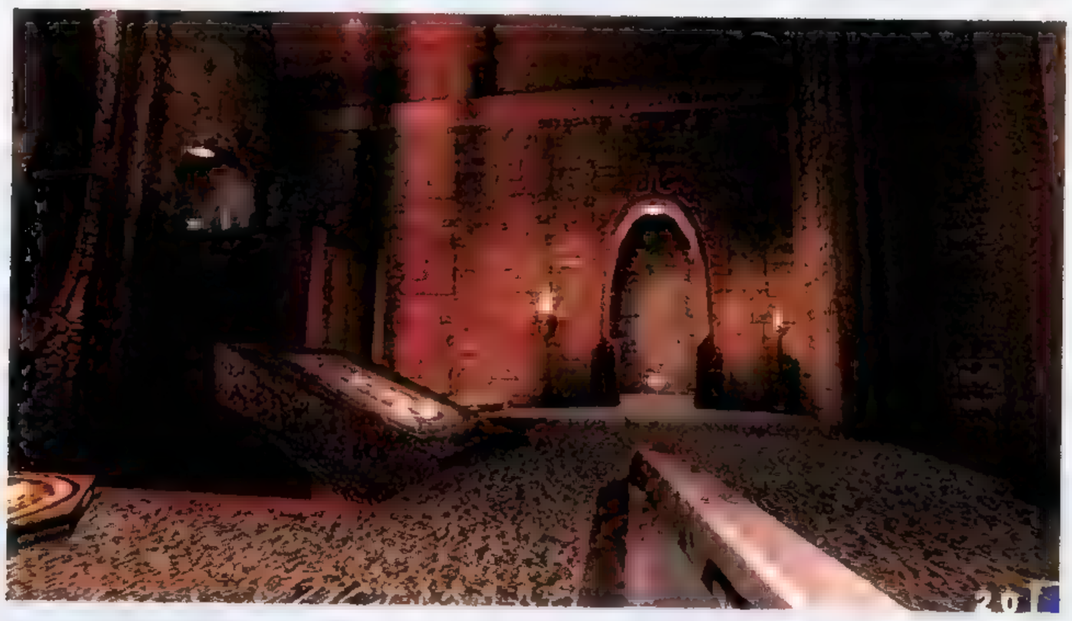
Povray is an open source 3D renderer which renders scenes described in a specialised programming language. Here we timed the standard Povray benchmark scene, which includes a large number of complex effects. AMD64 puts in a great performance, shaving more than 30 percent off the rendering time.

Lower is better	32-bit	64-bit	Margin
Povray 3.6.1	1664.6	1270.2	131.1%

Cryptography

Crypto is one area that does deal with large numbers, so it's no surprise to see the 64-bit math improvements finally kicking in with these tests. With nearly a threefold improvement in performance on the RSA tests, this has to be the chip of choice for crypto work.

Higher is better	32-bit	64-bit	Margin
OpenSSL 0.9.7 AES	65410	121486	185.7%
OpenSSL 0.9.7 RSA	528.3	1473	278.8%



Gaming

Naturally we need to include some gaming benchmarks, but with all popular games being commercial we're limited to testing just 32-bit binaries. None-the-less, using the tried and true benchmark of Quake 3 we found that, indeed, even though the binary itself is only 32-bit the game still benefitted from an underlying 64-bit system.

Higher is better	32-bit	64-bit	Margin
Quake III	392.2	412.8	105.3%

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The Silent PC Project Part 2

In this next installment of the Silent PC Project, Ron Prouse shows you how to build a quiter machine from scratch

Ingredients

In Part 2 of the Silent PC Project we start building the ultimate quiet PC enclosure – and when it's complete you, the lucky reader, will have a chance of winning it all for yourself!

Special thanks goes to Altech Computers (**www.altech.com.au**, Ph: (02) 9735 5655) and PC Case Gear (**www.pccasegear.com**, Ph: (03) 9584 7266) for donating the components used to build the machine. For this month's installment, the ingredients are:

Altech Computers
PC Case
Antec 'Super LANBOY' ATX MiniTower, $165.00
Power Supply Unit
Antec Phantom fanless 350W PSU, $308.00
Fans
GlacialTech 'SilentBlade' GT12252BDL-2 Case Fan, $19.00

PC Case Gear
Filters/Adaptors
120mm Aluminium Filter $12.50
Heat Sinks
ThermalTake Extreme Spirit $22.00
Vibration Isolators
Noise Isolator Flex Pad Kit $25.00, Siliceous Washers (10) $4.50, Siliceous Sheet for 120mm Fan $5.50, Siliceous Sheet for ATX PSU $6.50

Thanks to their support you could soon own one of the queitest cases on the planet!

Last month we looked at some of the simple ways to quieten down an existing PC case, by taming loud fans, adding fan-speed control devices and reducing the overall vibration levels that are the major components of *noise*.

But what are the options if the case is a virgin canvas? A shiny new box that does not have any existing bad habits? What attributes are worth looking for, and what are the traps to avoid?

The first point worth raising is that computer cases are not like fashion – just because skin-tight hipsters are all the rage does not mean that they are the answer for everyone.

Sometimes the perfect solution is not the stylish, sexy or flamboyant 'look' that we would like, but if a certain type of performance is the objective then there will have to be some logical compromises made along the way to help support a successful outcome.

Common sense tells us that a QuietPC case needs to be:

Large – The more airspace between components usually means that cooling solutions are more effective, so there can be less of them. It is also much easier to flow a given volume of air through a larger space. As an example, if it takes 150 litres of airflow per minute (LPM) to maintain a target ambient temperature, then a 15 litre case has to have the air replaced every 6 seconds – which means a fresh air inflow of 25 LPM. Double the size of the case and the flow rates can be halved.

Rigid – Sound is any form of vibration, and the worst form of noise is random, induced vibration – quite often referred to as harmonic resonance. Unlike planes, bridges and buildings, harmonic vibration is unlikely to cause a massive collapse of your

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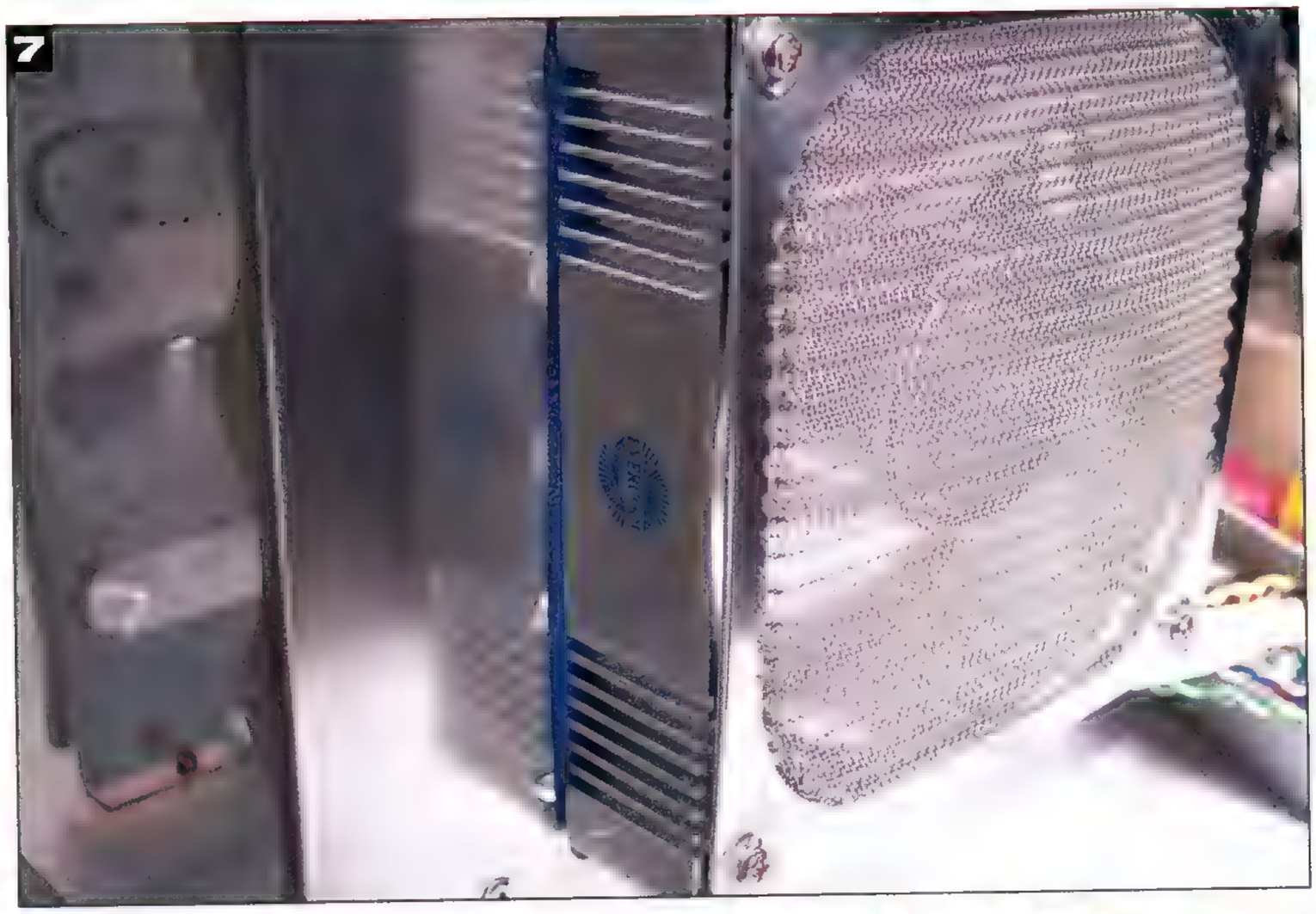
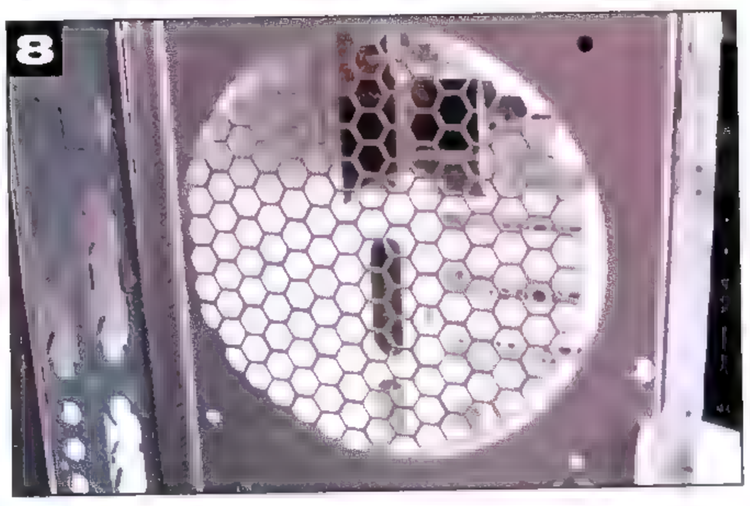


6 The Super LANBOY has one of the best examples of air restrictions that I have seen on a premium level case, but luckily it is also an easy situation to resolve. The punched-metal grill would limit the airflow down to approximately 50 percent of its potential volume, and generate noise through air turbulence. As the hard drive rack is positioned immediately behind it, the easiest method of removal was with a Dremel and reinforced cut-off wheel, and then cleaning up any rough or sharp edges with a small drum grinder.

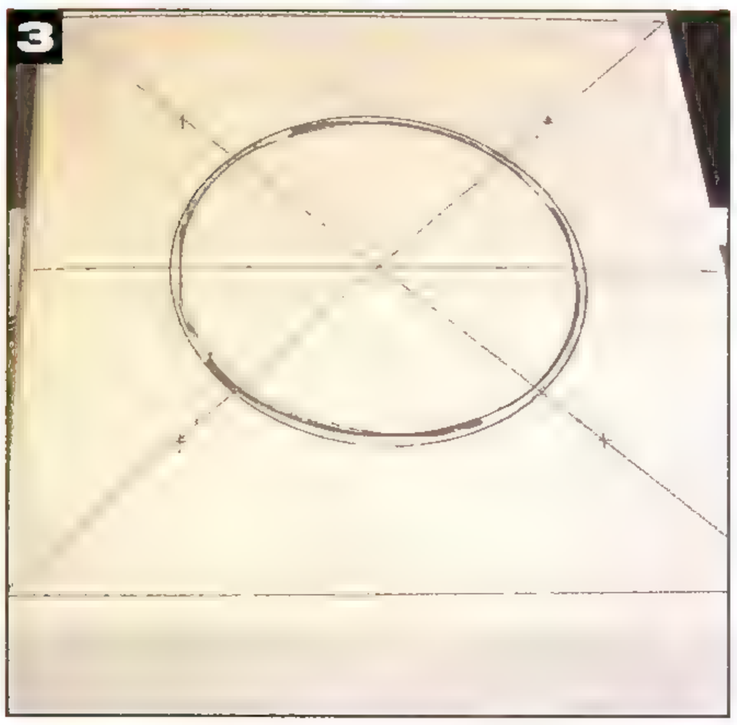
7 With the restrictions removed, the next step is to re-fit the fan so that it will run much more efficiently. We replaced the Antec fan with an Evercool unit, as although it is slightly more noisy than the original, it also has nearly double the rated airflow. Higher flow is a necessity when adding a dust-filter such as the aluminium mesh one used here. These filters will not stop small dust particles, however the trade-off is the amount of air that can flow through easily. To stop any vibration the fan has had a siliceous pad fitted at the rear, and siliceous washers between the fan and the dust filter. With the original bezel fitted, the modification is almost unnoticeable.



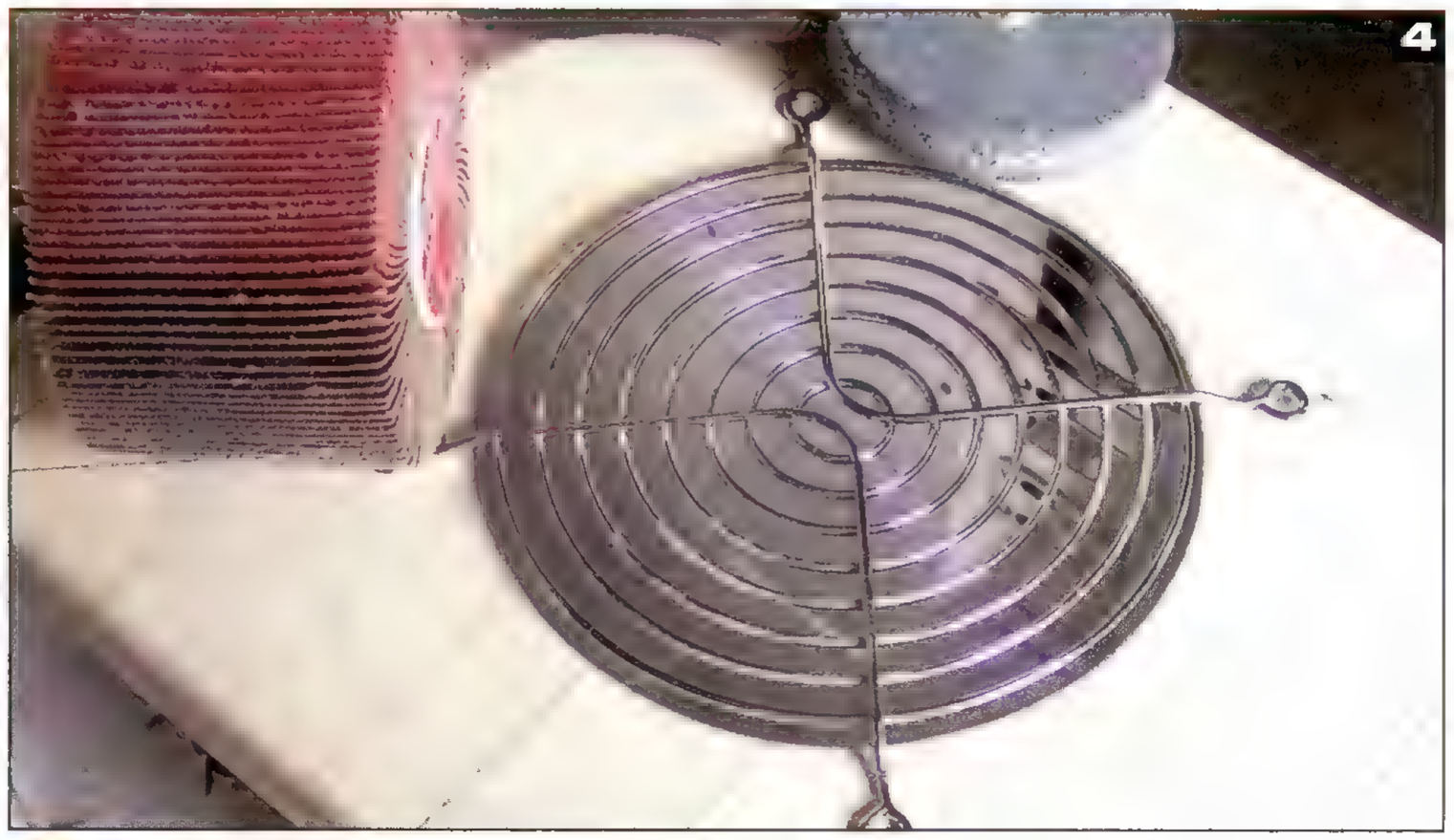
8 A similar process has been performed on the rear fan port, which again will assist airflow and reduce noise. The honeycomb grill has been carefully removed with a Demel and rounded out with a circular grinding drum. The reason that we mention 'carefully' is because the rear of the case does not have much strength until the fan is attached.

Conclusion

Now that the case has power and airflow, the next step is to fit it with a fan speed controller / temperature monitor, additional sound deadening, and some form of HDD cooling and silencing – all of which will be featured in Part 3 next month.



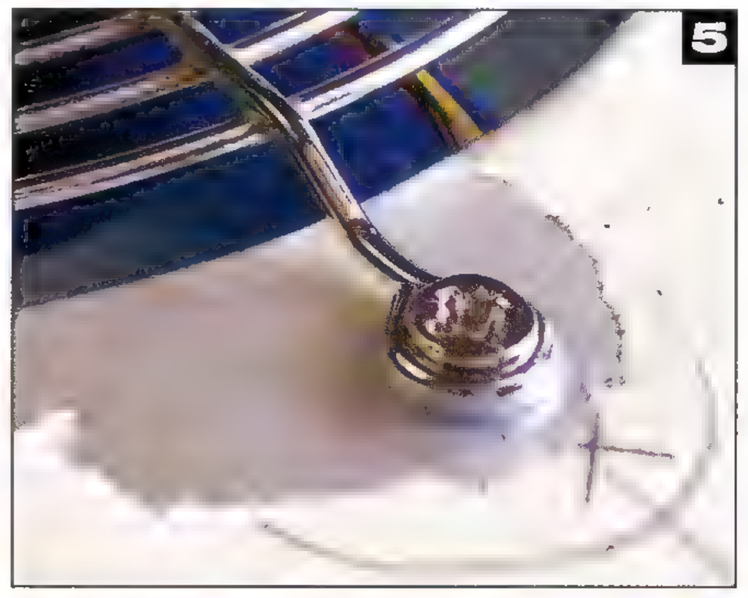
3 Fitting a top blowhole is a very effective method of increasing airflow where it is needed the most, as hot air will accumulate at the top of the case. It is also a necessity in this instance for ventilating the fanless PSU. Covering the case with masking tape serves two purposes – it protects the case finish, and also provides a better surface to draw on. With the guide-lines marked in place, a 6mm starting point for the jigsaw is drilled, and the hole cut out. The aluminium that the Super LANBOY is constructed of is very thin – less than 1.0mm – so it is wise to cut slowly and smoothly using a cutting blade that is designed for this type of work, rather than rushing it and 'tearing' the metal.
One thing to remember – a circle is one constant bend, not a series of straight lines with corners!

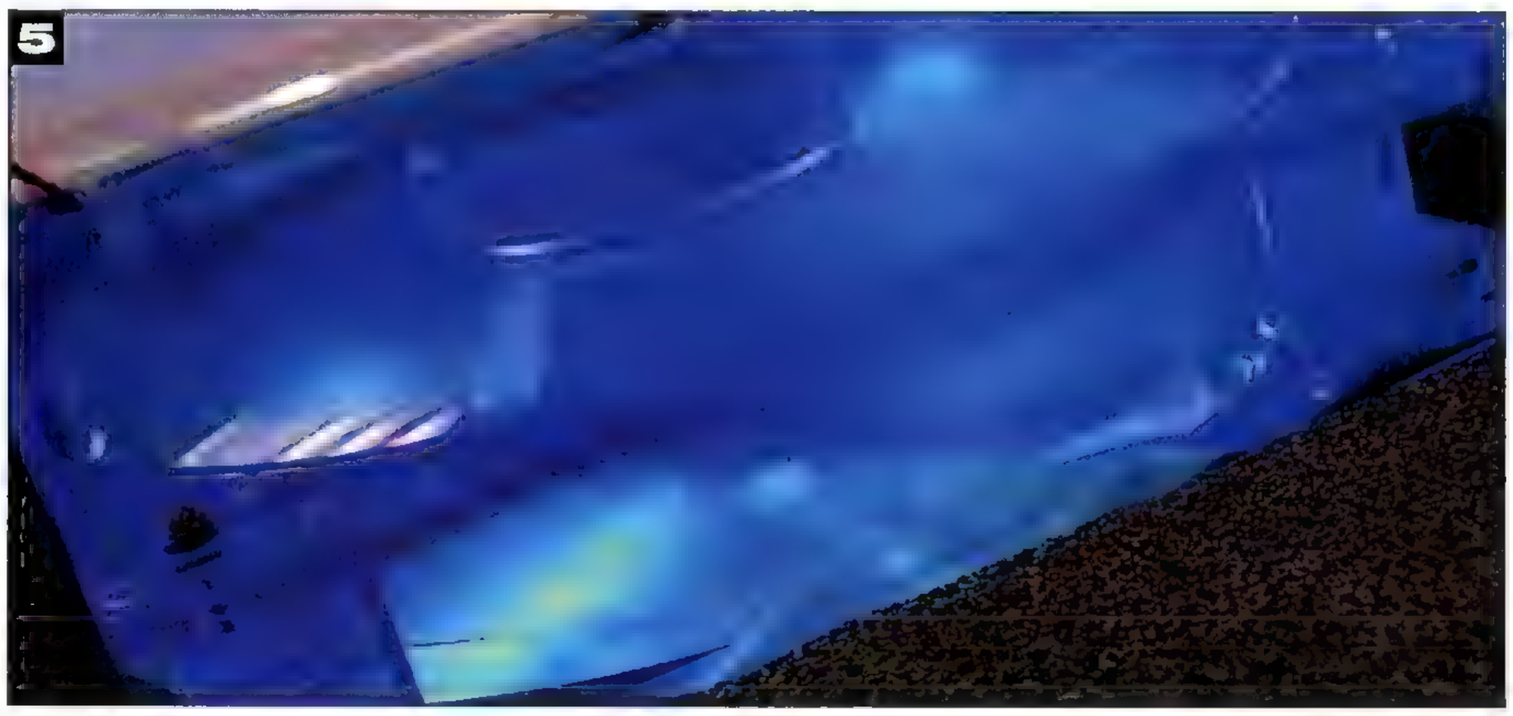


4 After cutting, the fan hole will need to be ground-out to round, sanded and polished. The most useful tools we have found for this task are circular grinding wheels and drum sander attachments, which fit to a standard power drill.
Use the largest diameter possible to give the best results when shaping circular cuts. De-burring the edges with #600 grit sandpaper, and final polishing with an alloy polish such as Autosol will give an excellent finish on aluminium. Something worth noting here is that the four 'legs' on wire grills are very rarely symmetrical by the time they get to the consumer, so drill the holes evenly to suit the fan mounting points, and then gently bend the legs with pliers so that they line up to suit.

5 The next step is to line the inside of the case-top with a section of 'Noise Isolator' sound deadening pad, cut out the fan hole with a razor blade, and fit a GlacialTech fan and plain wire grill.
Wire grills have been used instead of decorative items as they were found to have a minimal impact on noise levels (see Part 1 last month). The fan grill has also had siliceous washers fitted at the contact points with the case, and when combined with the acoustic foam on the inside this forms a 'sandwich' that will eliminate the inevitable 'fan-metal-metal' vibration.

Looking back at the introduction, adding this blow-hole has achieved several of the stated goals by increasing airflow, adding additional rigidity and density to the top of the case, and left adequate airspace around the components to ensure better cooling properties.





case, but a flimsy, 'tinny' box is guaranteed to increase your aural discomfort.

Heavy – Well, within reason! The truth is that the thicker the construction and the denser the material, the better the soundproofing – especially against higher-frequency sound waves, in the spectrum where humans have more acute hearing.

So, what is required is a 204 litre drum, constructed of concrete, with triangulated structural supports made from 12mm thick steel rods. Just the thing to take to a LAN... if LAN stands for Large And Nasty, right? Not so!

As long as you choose a 'reasonable sized' case for the application, there are simple solutions that will help to attain the required attributes. Additional airflow can be achieved through larger fans, vibration can be reduced by dampening, and density can be added with acoustic materials. In simple terms, a nearly suitable enclosure can be re-engineered to be 'almost perfect'. The main thing is to at least start off in the right direction.

▲ **The Super LAN BOY before we begin**

For the purpose of this project we'll get to work on an Antec Super LANBOY, which defies the above logic on several points. It is reasonably small, constructed of very light-gauge aluminium, and it is not overly rigid. What it does have going for it is a good internal layout, excellent airflow potential and concealed external drive bays. A great case for a light, portable PC – not a good choice for a server packed with storage. Is it possible to create a quiet PC case with good cooling capability from this base? Lets find out.

1 The first component is the most important – the Power Supply Unit (PSU). As mentioned last month, the PSU is a critical component when creating a quiet PC, as well as the basis of a stable computing platform. A good quality PSU should outlast at least one major upgrade, so it is worthwhile spending a little more to get the right unit. Pictured is the 'new' Antec Phantom 350W fanless power supply, utilising heatsinks and existing external airflow to disperse heat.

This is an important point – most computer cases are designed around the convention that the PSU will have active cooling, so in this instance additional cooling may be required to keep temperatures down. On the other hand, it is totally silent. Totally.

The other issue is power output. Don't be fooled into believing that 350W is inadequate for the average PC's requirements. If you are running a single optical and hard drive, 4-5 120mm fans, a power-hungry graphics card and even a cold cathode or two, a 'real' 350W unit should deliver ample grunt – a three-fan 550W killer PSU is often just overkill.

2 When modifying a case it is always a good to have an idea of what you are going to do prior to cutting things up. The old saying is 'Plan ahead, measure twice, cut once' and this is something that we can't emphasise enough – we once saw a Lian Li case fitted with a perfect top blow-hole... right where the PSU needed to go!

As a starting point, strip the case down to bare bones, removing the bezel, hard drive racks, etc. The PSU should then be fitted, and its location and physical size measured and marked-out onto the case, both interior and exterior. Make sure that there is an allowance for things such as wiring looms, etc. This will ensure that everything else will fit without issue later.

When fitting a 120mm fan into the top of a case, you will normally lose the use of the #1 5.25" bay for optical or hard drives, however it is still usable for fan controllers, LCD displays, and other components that don't require a lot of depth.

Ace in the hole

Logan Booker contemplates games during a month of no games.

January, the month immediately after December – according to most Gregorian calendars anyway – is always a slow one for the games community. Developers have finished their big projects and publishers have pushed them out into the big wide world of capitalism where, using various methods of disgorging cash from their bank accounts, consumers will decide who floats and who sinks.

Standard procedure for publishers these days is to release a bunch of games, knowing only one or two will actually make money. The profits from their single success will then pay for the games that sucked, and the cycle continues. Sometimes, however, one of the games they expected to suck actually doesn't.

If any publisher got lucky last year in this regard, it was Vivendi. Despite all the doom and gloom of financial problems and debacles with developer studios, the tough French publisher had two aces up its sleeve – Valve with Half-Life 2, and Blizzard with World of Warcraft. Both of these have made it oodles of money.

However, another secret success lurked in the background – Chronicles of Riddick. The game didn't really have much going for it. For one, it was a movie-to-game adaptation, which 99 percent of the time spells 'crap' in big, vibrant white letters. Adding to this, it was a movie-to-game adaptation based on a terrible film, which really stacked the odds against poor Riddick and his normal-mapped ambitions.

Despite this, Starbreeze, developer of Escape from Butcher Bay, managed to put together a really good game. It made excellent use of the source material as well as the technology, and the effort the developer has gone to really shows. We tip our hats to them for pulling it off.

Perhaps the best way to get an idea of what Starbreeze has managed to do is to play the game. Failing that, you can always check out our review on *page 106*, where we have plenty of screenshots for you to gander at.

You'll also notice we've changed our game review template a bit. No more half page reviews, just full-page and double-page goodness, packed with extra screenies and only the information you need. We really hope you like it.

Otherwise, have a long, memorable February of gaming. While most of the action is happening online, with World of Warcraft on the PC (regardless of the unbearable server downtime) plenty of fun is brewing on the console scene, as you're about to find out.

Let Logan know if he's a dork. Please say no.
logan@atomicmpc.com.au

gamecontents

powergamer

Each month, we'll provide hardcore hints, tips and links to get the most from your games. This time round, the focus is user interface mods for **World of Warcraft**. Enjoy!

CastParty
Compact set of party health bars that when clicked, will cast the most efficient healing spell on the character clicked.
▶ **wow.boorstein.net**

AllinOneInventory
Allows you to view all your bags in a single inventory window. A must for Diablo fans.
▶ **www.fukt.bth.se/~k/wow/scripts/AllInOneInventory**

SellValue
Tells you the cash value of an item while you're not at a vendor, simply by hovering over the item. Also lets you see the total value of all items in your inventory.
▶ **capnbry.net/wow**

shortcircuits

Previews of id Software's upcoming expansion for Doom 3, Resurrection of Evil, have confirmed the existence of a Half-Life 2-like gravity gun called the Grabber. Players will be able to use the Grabber to move small objects as well as some of the smaller enemies and propel them every which way.

Along with Phantom announcements, Microsoft chairman Bill Gates revealed at CES 2005 Microsoft's plans for the Xbox 2 console. In a Q&A with CNet News, Gates stated that the console would be more than just a games platform and DVD player, and Microsoft plans to integrate the console into its vision of the 'digital lifestyle'.

A press release from Ensemble Studios, creators of the Age of Empires and Age of Mythology, has confirmed that a third installation of it's popular Age of Empires RTS series is in the works. The available screenshots are gorgeous and give weight to the argument that RTS had finally caught up with FPS in the eye candy stakes. The game is expected to hit stores half-way through this year.

Sim Hack

According to website SecurityFocus, massive game-altering hacks are being snuck into very innocent-looking furniture and appliance add-ons for EA's Sims 2. Unwitting users who download these add-ons have discovered, to their dismay, that any custom changes present in the mods are filtered to every saved piece of Sim real estate on their machine. While hacks have been prevalent in games for almost the entire existence of the industry, the proliferation of the Sims 2 title to less game-savvy audiences has made it almost as big a problem as spyware. EA, the game's publisher, is aware of the issue, and 'white hat' Sims 2 modders have taken it upon themselves to code an anti-hack scanner for the game.

Phantom haunts CES 2005

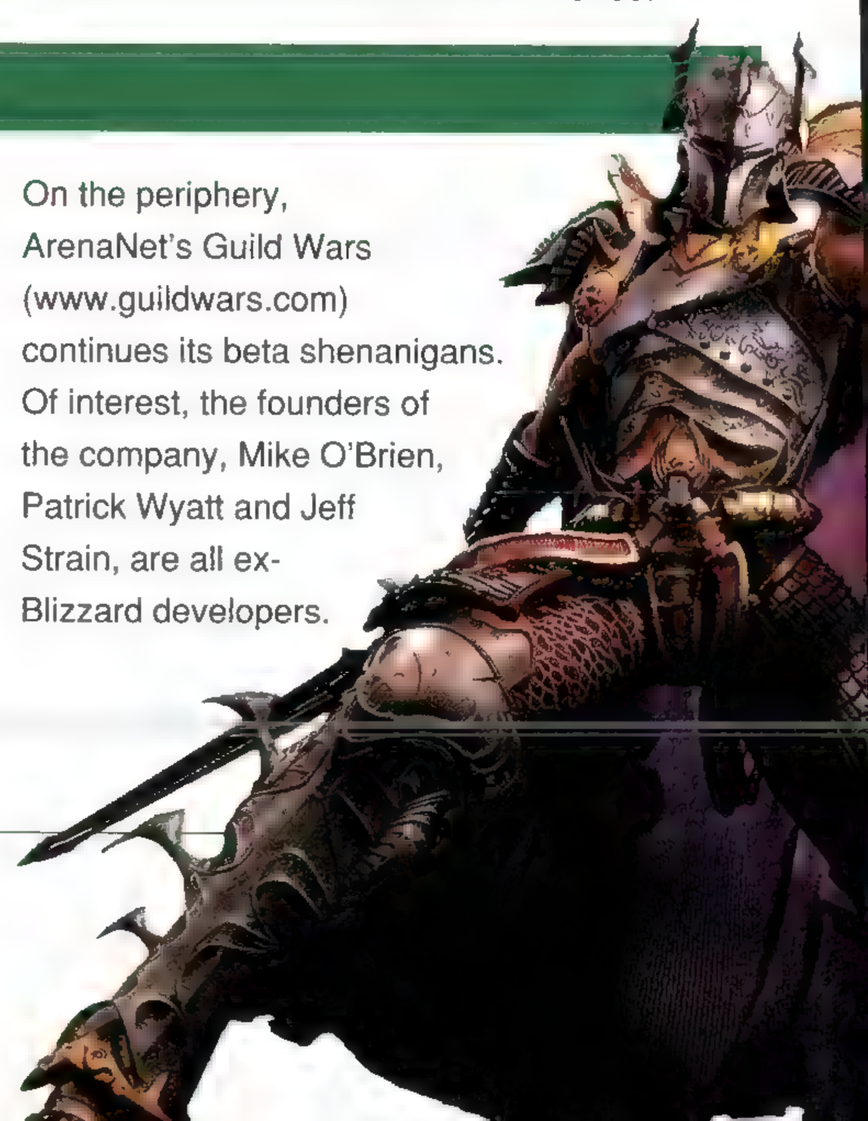
Infinium Labs' vaporous Phantom console has finally resurfaced at the 2005 Consumer Electronics Show in Las Vegas, deftly supplanting the company's somewhat recent legal tantrums and questionable business practices. The unit, called the 'Phantom Game Receiver', will employ a subscription-based service that will stream selected game content to users, allowing them to play those titles almost immediately. It remains to be seen however if this system will work effectively. The Phantom and the subscription service are set for a mid-2005 launch, and will feature an Athlon XP 2500+ and GeForce FX 5700.

ping: what's the go with MMOs?

World of Warcraft (www.worldofwarcraft.com), being Blizzard's first foray into the MMO market, has hit a few snags with server capacities and numerous perceived class imbalances. Just like its crazy cousin Warcraft III, the WoW forums are rife with complaints. For the most part however, Blizzard has done a solid job of shipping perhaps the largest, and most complete, MMO in the history of gaming – even if its support department is a little slow on keeping the community informed. The next content updates will contain the promised player-versus-player battlegrounds, hero classes and numerous bug fixes and performance tweaks.

Sony is gearing up to release a new content pack for EverQuest II (everquest2.station.sony.com) that explores the history of the night elves and the time between EverQuest and the sequel. However, in order to play the entirety of the expansion, players will need to cough up a modest sum, according to Sony.

On the periphery, ArenaNet's Guild Wars (www.guildwars.com) continues its beta shenanigans. Of interest, the founders of the company, Mike O'Brien, Patrick Wyatt and Jeff Strain, are all ex-Blizzard developers.



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DESTROY ALL HUMANS!

Logan Booker probes Dan Teasdale and Adam Iarossi on Pandemic's new title, Destroy All Humans!

Over the past few decades, aliens have been used as an excuse for almost every unexplainable occurrence including mysterious flying lights, unexplained scars, bizarre deep-space radar signals and missing personal items.

Of course, aliens come in all sorts of guises, from the creepy works of HR Giger to weird photos of little grey men with bulbous black eyes, and, while some are more inclined to disembowel bald manly women than flog your car keys, they all share a common characteristic – they're almost always the bad guy.

Most games put the player in control of a friendly, heroic protagonist whose sole ambition in life is to be as good as good can be. Sometimes though, we crave more devilish endeavours – especially in our games. Role-playing games can give you this in spades, but it's hard to find a more easy-to-get-into, arcade romp that provides instant gratification of one's shadowy desires.

Death to water bags

To the rescue is Brisbane-based developer Pandemic. It had this very idea a few years ago, way back in November 2002. The idea gave birth to Destroy All Humans!, a game that places the player in the silvery space boots of a decided quirky, and not at all friendly alien called Cryptosporidium-137. What better a character to play in pursuit of such corruption than an alien bent on genocide?

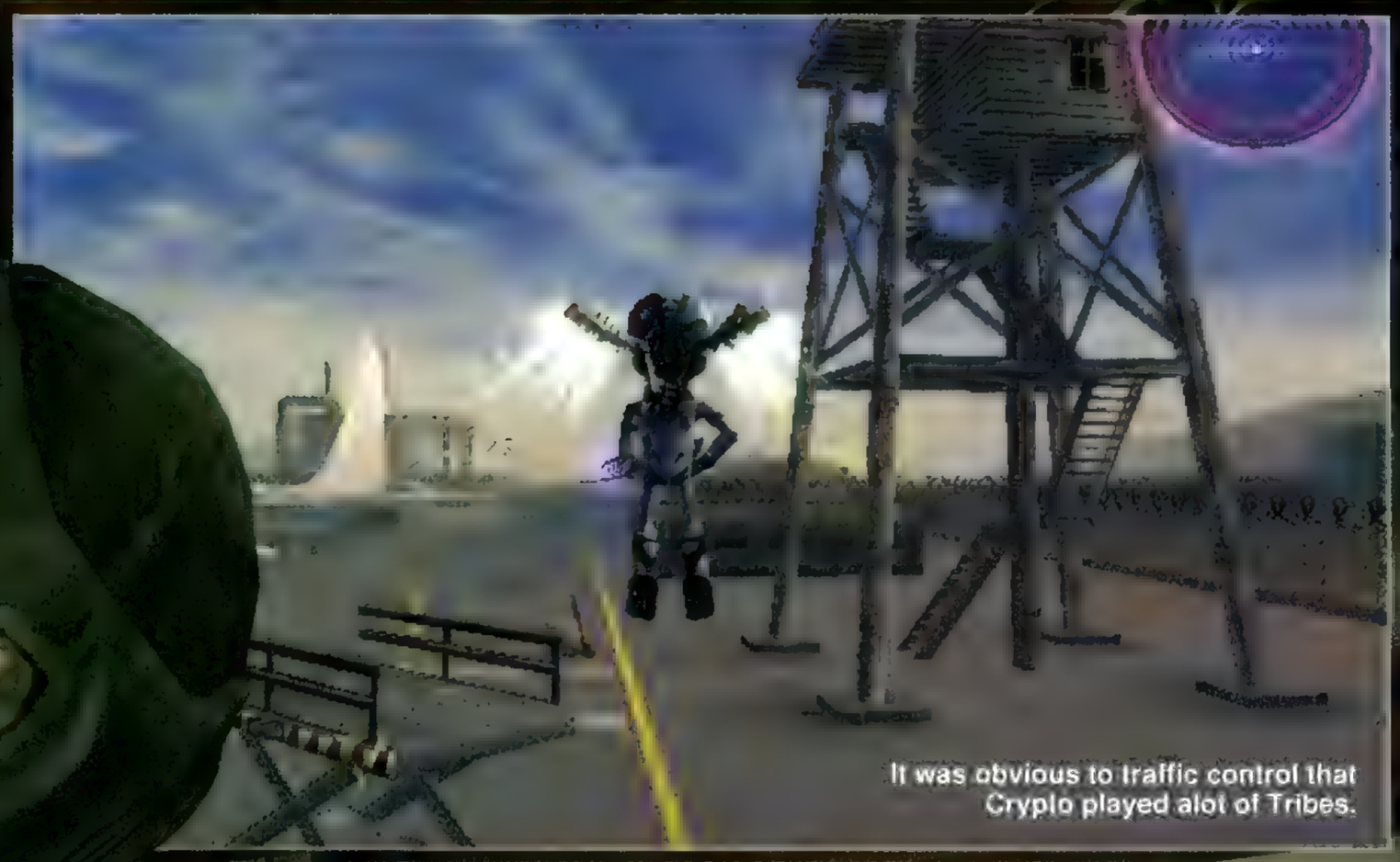
'The original idea for Destroy All Humans! actually started in an email thread one day,' says Dan Teasdale, Lead Designer on Destroy All Humans!. 'We'd just finished working on a project and we were tossing around ideas for games, and in between suggestions for the "Millenium Falcon Simulator" and "Brad Ludden's Pro Kayaker" one idea stuck -- [that] of playing an alien invading earth in sci-fi 50s, abducting cows and shooting death rays.'

According to Teasdale, one of the primary design goals of Destroy All Humans! was to make the game, at it's core, both extremely funny and fun to play. The graphics, while slick, have a distinct retro cartoon feel and the sound effects and dialog are heavily coated in flavoursome humour, mostly influenced by classic science fiction.

In fact, Teasdale explains that the fun and funny factor was so crucial, it's invaded everything, including the player's selection of weapons and numerous earth-bound opponents. In some cases, this design ethos made it hard to implement all the features Pandemic had originally planned.

'That's the trouble developing an original title that doesn't neatly fit into a genre – you're bound to design lots of stuff that looks good on paper, but is completely boring, frustrating or useless in the game,' says Teasdale.

'The most prominent case of this would have to be the actual design focus of the game itself. We started out with a game that, 80 percent of the time was "Destruction from the UFO" mode, and 20 percent was "Messing With Humans in Alien" mode, and while our initial tests showed that it was a solid mechanic, by the time we finished the prototype both THQ [publisher of Destroy All Humans!] and ourselves realised



It was obvious to traffic control that Crypto played alot of Tribes.

that it was hard to [illegible] the original three be [illegible] probably [illegible] you needed to [illegible] two [illegible]

In the end, Pandemic decided to [illegible] the [illegible] to the game was [illegible] minds and bodies of [illegible] while you [illegible] above in your shiny flying saucer. Obviously the 'UFO' mode had to be cut down in order to accommodate this change. Teasdale however assures that it's just as fun, if not more so.

'I feel that the final result really works – you have a lot of fun messing with peoples minds and seeing how people work, and then you can jump up into your UFO and watch them all flee from your fiery death ray.'

Creature features

On of the core engine features of Destroy All Humans! is its behaviour system – a complex component that controls the actions of all the characters in the game. The advantage of such a system is that, while it may take more time to develop and bug squash, allows for infinitely greater flexibility than a hard-coded set of predefined reactions.

'Every person [in the game] has their own set of eyes and ears that take in stimuli around them, and then depending on the stimuli they see and the type of people they are they'll react differently,' explains Teasdale.

'An example of this happened just [recently, during play testing]. In Union Town [a level in the game], I fired an Ion Detonator – an alien pipe bomb – near a bunch of dockworkers.'

'The Ion Detonator makes short beeps

that get faster and faster until it detonates, however every time it beeped it attracted the people nearby…As one person approached the Ion Detonator, I triggered the explosive, setting him immediately on fire from the blast. The next thing I know…the poor combustible human is running towards the nearest water source – the ocean – while everyone around him is staring at him trying to figure out what he's screaming about.'

According to Teasdale, this whole sequence was thanks to the core behaviour system. 'From a design perspective, it's a great way for the player to create emergent gameplay and situations that feel like they were intended, even if we never encountered them while we were making the game,'.

Design however must meet with the practicality of coding extensive features. Thankfully, Pandemic, through hard work, managed to get everything working.

'The behaviour and stimulus systems… were tricky to get working right,' explains Adam Iarossi, the game's lead programmer. 'The interdependency of code, configuration files and animation would often cause our game actors to not respond when expected, or respond incorrectly. Lots of frustrated yelling at the screen usually ensued.'

'I think the hard work was justified when I saw the "Zapomatic'd chicken" and "Anal-probed human" behaviours for the first time,' he says.

Despite the problems the team may have encountered, Teasdale is happy with the result. 'In terms of gameplay, I think we've succeeded in creating an environment that encourages the player to think up alternative solutions to missions, and allows them to create their own goals and succeed at them without running into limitations in the engine.'

Terrestrial tech

Pandemic designed the engine behind Destroy All Humans! from scratch. The original intention was to get the game running on both the Xbox and PlayStation 2 consoles, and, like any developer working on a multi-platform game, have the versions as identical as possible. The original set of features alone, which demanded airborne vehicles and sprawling environments, required some creativity on the part of the programming team.

'Technology-wise, having an engine that allows the player to destroy every object in a large multi-kilometre world from both ground and air is definitely pushing the curve – the only other game I've seen handle this elegantly while still looking good is Mercenaries, made by one of our sister teams over in Pandemic Los Angeles. The fact that we've managed to achieve this on hardware with 4MB of VRAM, 32MB of RAM and a 300MHz processor [read: PS2] and…maintain a solid frame-rate continually amazes me,' says Teasdale.

'Developing for PS2 has been more time consuming, as the development tools are a step or two behind the Xbox in usability,' confirms Iarossi. 'Programmers still feel the

pain developing for PS2, with compile and link times being longer and debugging being slower.'

To help it along, the PS2 version uses custom code to make full use of the resources available to it. Iarossi also gives praises to Eric Smolikowski, the title's lead graphics programmer, for getting the visuals of the engine looking terrific regardless of the system. 'All the niceties are supported on both platforms: wide screen, progressive scan video and surround sound,' says Iarossi.

Additionally, the game engine on both the Xbox and PS2 makes use of a telnet server, allowing the developers to use a range of PC utilities to track and edit the game as it is running.

Bright lights

Destroy All Humans! is a visual feast. Pandemic has gone all-out tuning and polishing the environments and characters so they look totally delectable. Of course, pretty pictures come at a price. The Xbox version, for example, was thrashed by the engine.

'We neared the theoretical limits of the GPU in early in development, pushing over 20 million vertices per second. Since then more of the GPU has been devoted to making less polygons look better through post-processing effects,' explains Iarossi. Pandemic was also sure to put the Xbox' pseudo-GeForce4 through its paces.

'Every vertex and pixel runs through one of the many shaders, which are selected during the asset building process based on the properties of the asset. This gives the artists access to the many rendering features of the engine and ensures that the most optimal vertex and pixel shader is used for each asset,' says Iarossi.

There's only one way to cook a steak – while it's still in the cow.

More than just beautifying, the Xbox' shader abilities were used to add nice touches to the overall game experience. If the player leaves the controller alone for a while, the engine will go into a 'black-and-white movie' mode and play music appropriate for the cheesy sci-fi feel of the title.

According to Iarossi, in order to get the same functionality on the PS2 the team had to make as much use as possible of the console's graphics processor, the GraphicsSynthesizer.

'The PS2 supports almost all rendering features required by the artists. We approached the engine from a PS2 perspective…and then implementing that functionality [of the GS] on the Xbox with pixel and vertex shaders.'

'Our very first builds were Xbox only, so squeezing the game into the PS2's memory was time consuming,' explains Iarossi.

Resistance is futile

By the time you read this, Destroy All Humans! should be on the verge of release, if not already so.

'At the moment, we're mainly focused on getting the Xbox and PS2 [versions] out the door here at Pandemic Brisbane, along with about six or seven different language and region localizations,' says Teasdale.

Currently, there are no immediate plans to release the game on other major platforms; however, there may be a mobile version of some sort in the future.

'THQ Mobile … [is] working on some versions of Destroy All Humans! targeted at mobile phones, and details for getting these will be included as an unlockable in the Xbox and PS2 versions of Destroy All Humans!,' reveals Teasdale.

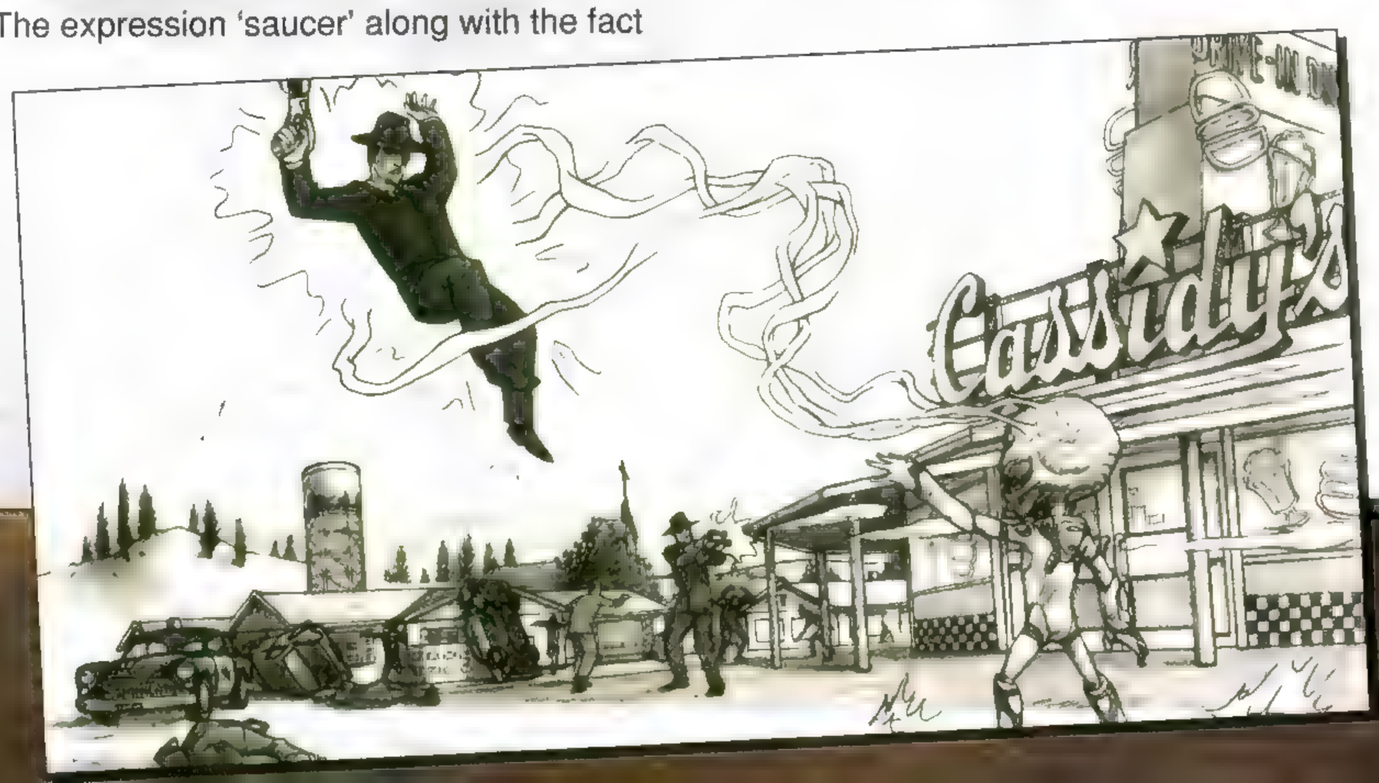
All in all, the 50s sci-fi feel plus Pandemic's emphasis on 'the funny' sounds like an awesome combination. Even better, Destroy All Humans! should be available by the time you read this.

Source of saucers

So, why are they called flying saucers? Well, you can thank US native Kenneth Arnold, who coined the phrase back in 1947, for the lovely gem of colloquialism. Kenneth, while flying his plane near Mt. Rainier, Washington, witnessed what he described as a 'chain of … saucer like objects.'

According to his account of the sighting 'These objects were holding an almost constant elevation; they did not seem to be going up or coming down, such as would be the case of rockets or artillery shells. I am convinced in my own mind that they were some type of airplane, even though they didn't conform with the many aspects of the conventional type of planes that I know.' Earlier in the report, Arnold asserts his great familiarly with planes of the era.

The expression 'saucer' along with the fact that they were airborne, was quickly picked up by media and rednecks alike and, since then, has become a popular way of referring to unidentified flying objects when some melodrama is required.



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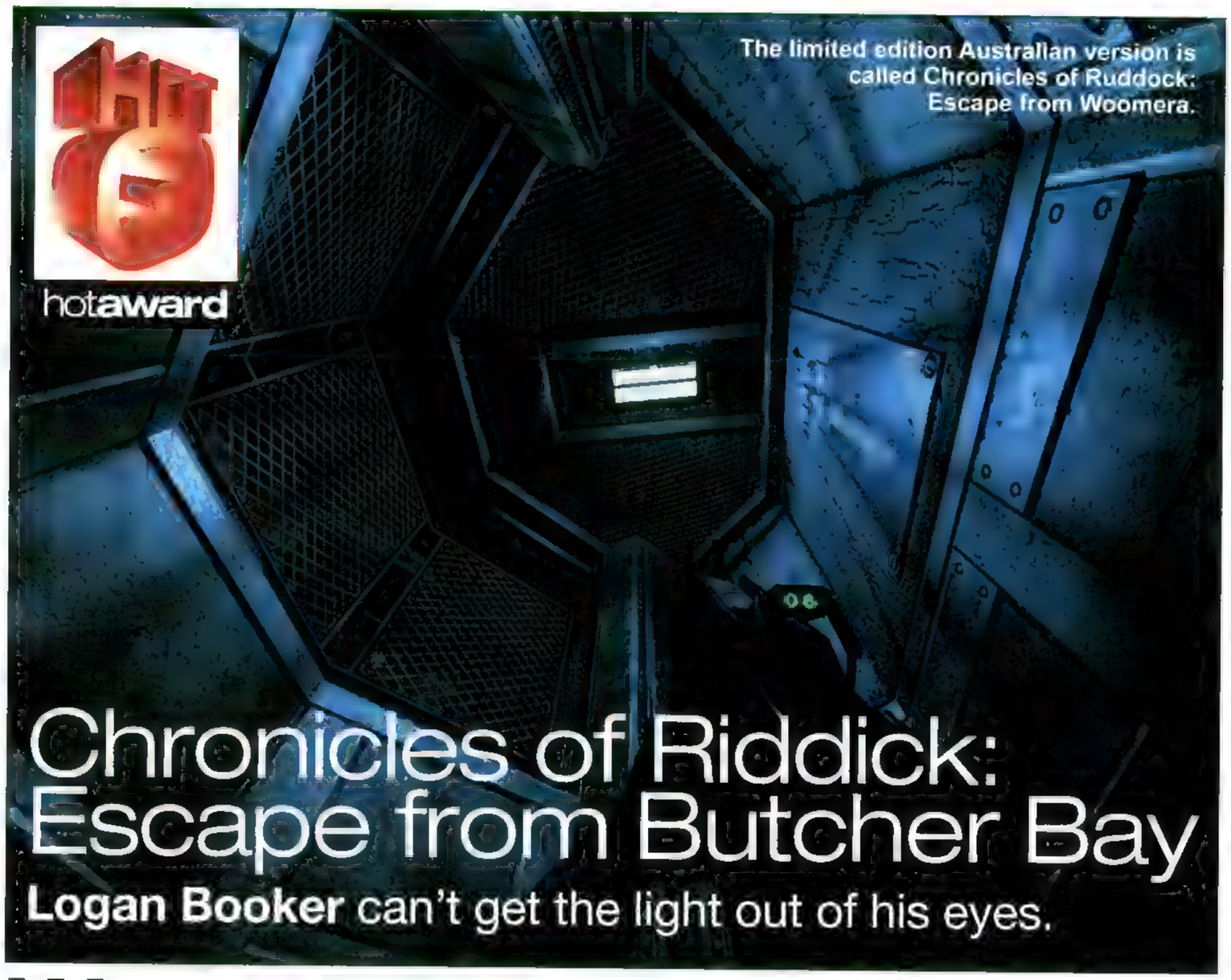


Chronicles of Riddick: Escape from Butcher Bay

Logan Booker can't get the light out of his eyes.

While the movie *Chronicles of Riddick* was questionable, Butcher Bay is, surprisingly, one of the best movie-to-game adaptations to be developed in recent years. Soaking up as much good as it can from the small disaster that is its namesake, the game puts the player in the shoes of Riddick, modelled and voiced by Vin Diesel himself, as he makes good his escape from Butcher Bay, a prison located deep within the middle of nowhere.

Normal mapping is all the rage these days, as is dynamic lighting – and both of these are put to good use in Butcher Bay. The graphics are very similar to that of Doom 3, if not better, thanks to the use of high-resolution textures.

Rather than fall on the standard shooty FPS formula, Riddick introduces a unique hand-to-hand combat system. While the player is free to use any weapon he finds, the most flexibility comes from going in barehanded – the player's options ranging from sneaking up and breaking necks to dodging around and throwing combinations of punches using the direction keys and mouse buttons. In fact, if timed correctly, you can disarm your opponent mid-fight and shoot them with their own weapon.

Developer Starbreeze has placed an emphasis on removing enemies silently by only giving the player a small amount of health. Healing is provided by 'Nanomed' stations that are located throughout the game, and much like Half-Life, have a limited number of uses.

The voice-acting in-game is nothing but class, and the animation is extremely good – for instance, in Butcher Bay, prisoners do push-ups, walk around, cough and even talk to those around them. The music and sound really set the mood, and if you can get your hands on it, the soundtrack is definitely a keeper.

Butcher Bay supports the latest graphics hardware, so, if you have an X800 or GeForce 6 card, there's support for 2.0++ shaders (soft shadows) as well as compatibility for 1.1 and 1.0 shader paths on lower-end cards. Performance is heavily dependent on your graphics card, and you'll really feel the framerate hit if you don't have the latest hardware. If you *can* supply the power it needs, the game is gorgeous.

If Butcher Bay has failings, they stem from a lack of polish. Combat can be clunky, and the default control system doesn't help in this regard. Throwing punches and blocking feels a little random, and some of the 'special moves' such as stepping out from corners is an exercise in finger acrobatics. The game isn't very long either, and you'll get around 10 to 12 hours if you play it on the normal difficulty.

None of this however detracts from the game as a whole, and Chronicles of Riddick: Escape from Butcher Bay is an engaging and visually accomplished title.

PC

Developer **Starbreeze Studios**
Website **www.riddickgame.com**

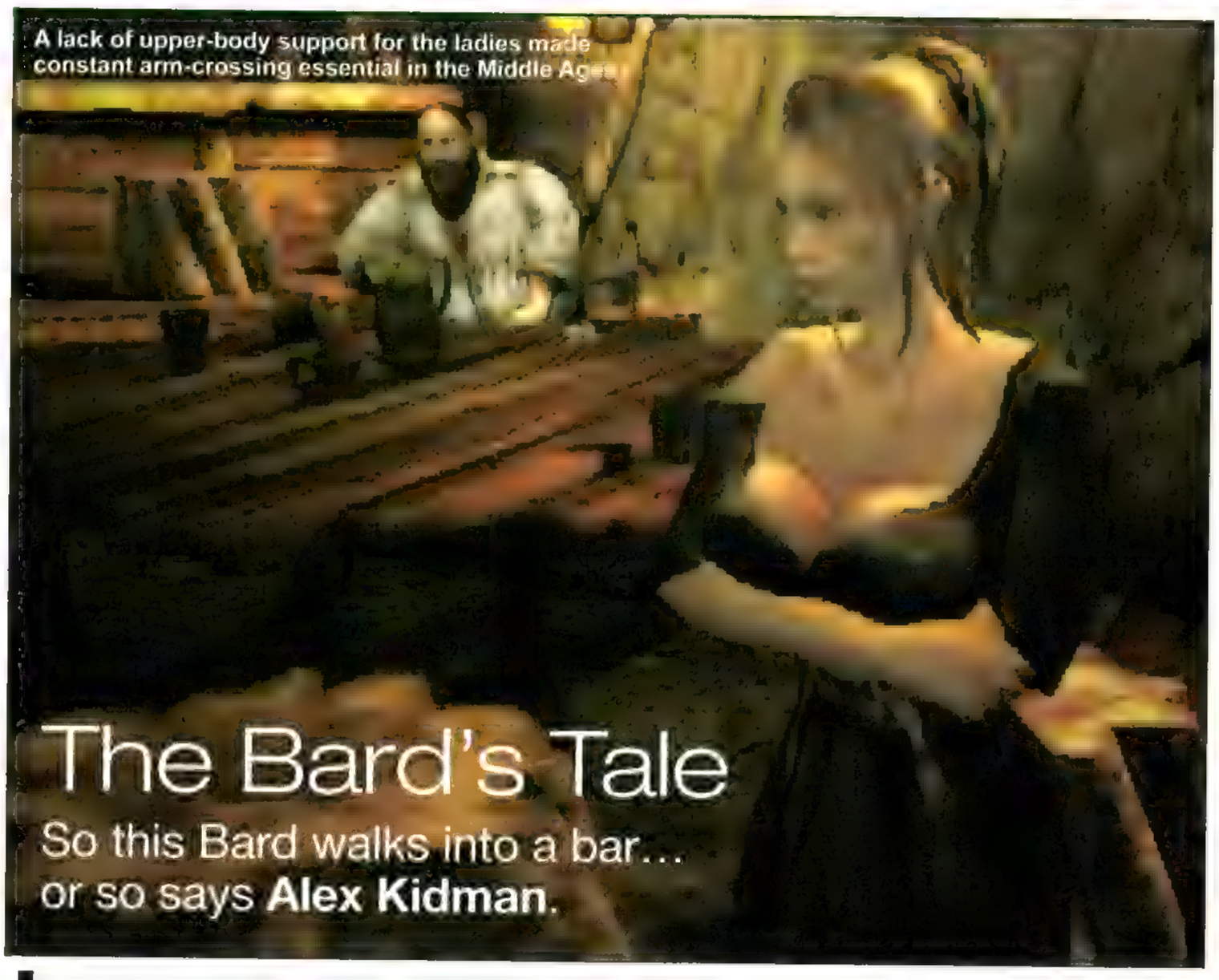
Recommended
2.4GHz/3000+ CPU; 512MB RAM; 128MB DirectX-9 video card

VERDICT

Gorgeous graphics; great dialog and voice-acting; engaging combat system.

A bit short; combat feels a little clunky; controls can be tricky to use effectively.

score **9.0** OUT OF 10



The Bard's Tale

So this Bard walks into a bar… or so says **Alex Kidman**.

If you were to pull The Bard's Tale apart, you'd find yourself left with a shattered disc, a lot of code that resembles just about every other console action RPG title, along with a whole lot of comedy ideas that must have looked great on paper. The Bard's Tale mercilessly extracts the urine from just about every fantasy cliché you'd care to name. It's a moderately clever idea, and if you're a fan of games of this type, you'll be intermittently chuckling at the game's script and hammering of some of the more obviously stupid clichés of the RPG world.

Sadly, it stops being clever in less than four hours. That's an estimate of how long it'll take you to realise that in order to extend the narrative, developer inXile padded the game out with pretty much every cliché that it tries to satirise. Between 10 to 15 hours later, you'll be done, but it'll seem as though you stopped laughing long before.

You play as the eponymous Bard in what is disappointingly a single-player affair. You're not solo for long, though, as the Bard's main claim to fame is that he can use tunes to bring to life various companions, each with their own special talent. You start out only being able to summon a humble rat – which the Bard uses to scare ladies in pubs or score free drinks with – and throughout the game you'll collect new tunes and equipment to play them on.

Eventually, the Bard finds himself accompanied by quite a motley crew of computer-controlled compatriots, which sounds like a nifty idea in theory. In practice, though, it quickly spirals into you running around the combat zone, fiddling with your lute (stop giggling in the back there) in order to revive the members of your star-studded cast. Typically, you'll spend most of your time reviving the Crone, your party cleric, because she's just stepped onto a plainly obvious spike trap. Avoiding the dozen Trow baddies who are out to impale you, you hit the final note of her sequence while nimbly avoiding a dozen sword blows, and the Crone comes back to life in an incandescent blaze of glory – only to promptly step on exactly the same spike trap, dying once again.

Once you've been through that scenario more than a dozen times, you'll willingly throw yourself on the Trow swords, while your controller makes a not-so-graceful arc towards the TV screen. At times like these you'll curse the fact that this is a single player affair – a real live ally wouldn't make the repetitive and stupid mistakes that your summoned AI-controlled allies do.

There are some shining parts of The Bard's Tale – it offers a streamlined interface for RPG newbies, looks quite good and features voice acting that carries the script further than it would otherwise stretch. Ultimately, however, it's a game that stands poorly next to titles such as Champions of Norrath or Baldur's Gate: Dark Alliance II.

XBOX

Developer **inXile Entetainment**
Website **www.thebardstale.com**

Players **One**
Other platforms **Yes; PS2**

VERDICT

Some great RPG cliché jokes; voice acting is superb; simple inventory management.

Comedy peters out quickly; deliberately lengthy; somewhat tiresome AI.

score **6.0** OUT OF 10

The Incredibles

Dan Chiappini gets in touch with his super side.

In a nutshell, The Incredibles game is a continuation and slight spin-off of the movie of the same name from famous animation house Pixar.

The developer, Heavy Iron Studios, has done a great job recreating the feel and action of the movie, having worked closely with Pixar on the game. The detailed environments and the voice-acting mirror the style and personality of the movie characters and their abilities.

The game begins part way through the film and will leave non-cinema goers a little lost from the get go. So here's a crash course – Mr and Mrs Incredible are superheros, who at one time diligently fought crime in their fair city, but, when an accident occurs and the supers are forced into an early retirement, it's a pretty tough adjustment for them.

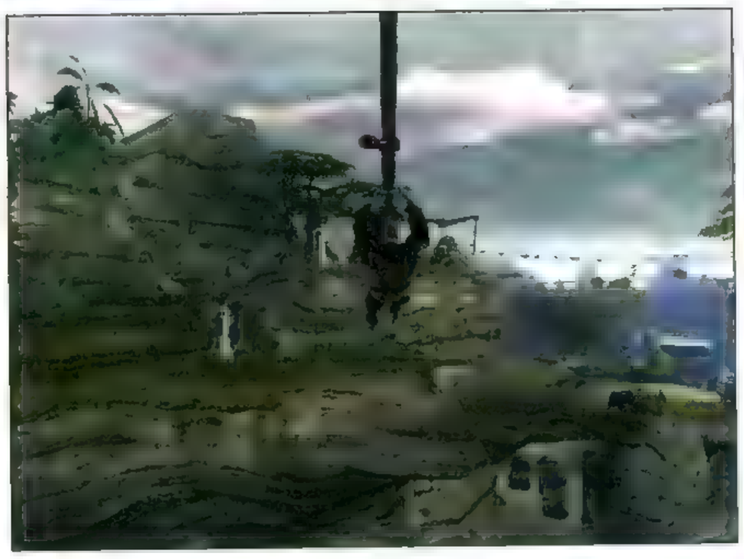
The game has all four main characters of Incredible family, each equipped with their own unique super abilities. Mr Incredible has super strength; his wife Mrs Incredible, otherwise known as Elastogirl, can contort and twist her body in ways nature didn't intend. Their two kids have abilities too – Dash has super running speed, while Violet can turn herself invisible and conjure instant force fields to protect herself and others from harm.

Incredibles is a classic platform punch-em-up, with cutscenes littered throughout the game. These are directly from the cinematic release and while it gives the game a really professional touch compared to some of the dodgier renders around, it felt like a bit of a cop-out recycling chunks of movie, even for a franchise licence. Considering they're only thirty second clips, even after having seen the movie there are some big gaps in the game storyline in the translation to a platform puncher.

Audio is reasonably good with the movie's original score featuring heavily in the game and menu systems. The voice-acting retains its all-star cast – Jason Lee, Elizabeth Daily and Samuel L. Jackson – for in-game effects, tips and humorous quips as you fight your way through about 15 hours of gameplay.

The game's graphics are great and help to really pull you into the super's world, unfortunately the control system is difficult at best. There's no locked camera so you'll either need to wait for the direction you're running in to lock behind or manually press the L2 button or fiddle with the analog nipples on the PS2 controller to be able to see what exactly it is you're swinging at. This is particularly difficult when being attacked from the sides and behind.

If you loved the movie, you'll relate better to the game than someone who hasn't seen it, but for players looking to pick something up for a fun mash it's not bad at all, though a revised control system or lock-cam would make this game much more fun.



PS2

Developer **Heavy Iron Studios**
Website **www.heavy-iron.com**

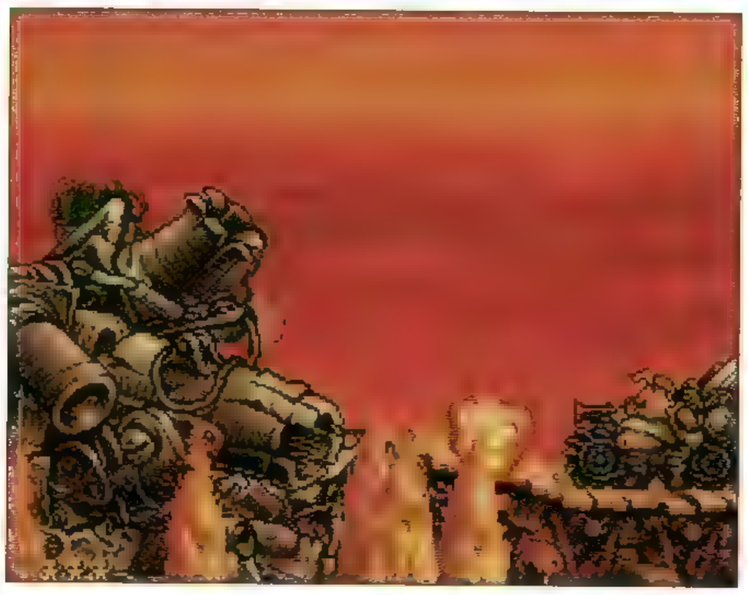
Players **One**
Other platforms **Yes; Xbox, PC, GC**

VERDICT

Fun movie licence with multiple characters for an easy pick-up and play.

Control system and camera need work; storyline a bit tough to follow.

score **7.5** OUT OF 10



PS2

Developer **SNK**
Website **www.snkplaymoreusa.com**

Players **Two**
Other platforms **Yes; Xbox**

VERDICT

Fast, frenetic side-scrolling gameplay; plenty of level and weapon variety.

2D graphics; extremely short; light on the extra features; simplistic play.

score **7.0** OUT OF 10

The era of the side-scrolling shooter has long since departed for the Undying Lands. Gone are the days you could load up some solid Mario goomba-squashing action or indulge in the creepy world of Castlevania, without the aid of an emulator or archeological team to excavate whatever 8-bit console has fossilised in your garage. So it's nice from time to time to grab a remake – or even a straight arcade port – and bash the living crap out of your controller in an attempt to fend off a never-ending army of homicidal sprites.

Of these side-scrollers, Metal Slug 3 sits near the top of the roost as one of the most engaging, frenetic titles. It had everything an avid arcade gamer could want, from endless power-ups and a variety of interactive vehicles, to fresh environments and loads of different enemies. Enter the PS2 port of this Contra-like masterpiece.

Metal Slug 3 for PS2 has actually been out since last year, however it's only recently it's made its way to Australia, and while it does have the nostalgia value in spades, it's a little lacking in the features department.

The game is made up of five or so levels, each level roughly broken into stages. In some places the player is on foot, battling everything from army troopers to zombie aliens, and in others you're in a vehicle, taking advantage of increased firepower or maneuverability. The weapon upgrades, which include the heavy machine gun, shotgun and missile launcher, help break up the monotony of drumming away at enemies with the default crappy pistol. Regardless of what guns you end up using, expect sore fingers by the time you reach the game's conclusion as Metal Slug 3 is most definitely a button-masher.

Yes, the whole of MS3 is there for the playing, but with unlimited lives the experience can be a little short. And by short, we mean *short* – an hour if you're lucky. But that hour is packed with action that doesn't let up until the last projectile of insane Anime proportions flies off the edge of the screen at sublight speeds.

The PS2 port comes with some additional features – two, to be exact – and these come in the form of extra levels. Both are uninspiring – the first is an 'eating competition' where two players battle to become the biggest first. And yes, we realise this sounds bizarre, but hey, it's a Japanese game. The second level has you controlling an army soldier with a particular weapon, such as grenades, which you get to pick before the mission starts. You only have one life though so it's frustrating to say the least.

If you have a fetish for arcade platform action, then you can do worse then Metal Slug 3. While it's great for a quick play through with a friend, don't expect more than an hour of gameplay and not much else to do once you've finished it.

Crash 'n' Burn

Ron Osborn examines the finer points of road rage.

There's something about the crunching of metal, squealing tires and the fiery inferno of thousands of dollars of wreckage that spells fun, particularly if you can walk away from it at the end. Video games aren't bad either, so you'd think combining the two would create entertainment perfection.

Like just about every other aspect, the aim of Crash 'n' Burn is simple: Be first across the line – no matter what. From the bumper car collisions to the 'Break, what break?' handling, CnB doesn't pretend to be anything other than an arcade game.

The tracks are mostly oval or figure-eight variants, the later particularly designed for devastating crossroad carnage. The simple construction means you don't need to memorise corners and while the tracks are short, having to deal with oil fires, debris and 15 vehicles trying to turn you into mash, you'll be lucky to cross the finish line in one piece.

The computer opponent AI is comparable to a game of American football. Lots of full body contact but not a lot of movement in any particular direction – at least for the cars at the back of the pack. The secret of success in Crash 'n' Burn is getting out in front early. This technique will see you breezing through the first few races but will soon become the bane of your existence when your opponents get faster and the same technique is used against you. You'll be infuriated with the regularity in which you'll find yourself getting caught in the crush for second, third and fourth place while the first car sets dazzling new land speed records.

As with many racing games, upgrading your car is essential. Most of the upgrades however are geared towards aesthetic customisation, in the same vein as Need for Speed: Underground. Unfortunately that's where similarities between the two titles end. The only performance upgrades you can buy in CnB are generic 'Upgrade' and 'Turbo' points. CnB's upgrade system is like a simplified RPG – rather than tuning the engine or dropping in a turbo, you distribute points between your cars three 'abilities': engine; gearbox and tires. Though you can eventually choose between four different cars, it's these abilities that affect the handling rather than the car you're driving.

There are a variety of driving modes to keep the races interesting, but by far the most destructive and fun are the Kamikaze modes in which half the field of cars drives in the opposite direction. Head-on collisions are the norm and staying alive until the last lap is a challenge in itself.

The 'win-at-all-costs' nature of the game, though entertaining, is also its weakness. While carnage is fun, it's best avoided if you want to stand a chance of taking first place. CnB can be quite fun in bursts, particularly the fender-grinding Kamikaze mode, but it could have done with a bit more polish.

PS2

Developer **Climax**
Website **www.climaxgroup.com**

Players **16 (via NetPlay)**
Other platforms **Yes; Xbox**

VERDICT

Sparks, fire and explosions. Insane Kamikaze mode!

Perhaps too simple – after a while it can become somewhat frustrating.

score **6.0** OUT OF 10

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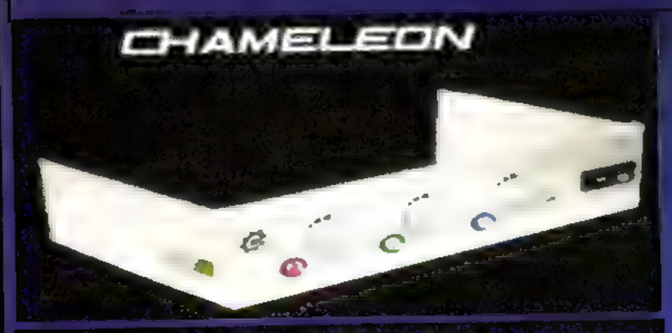

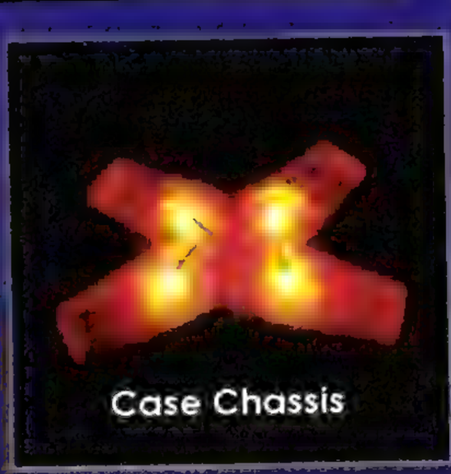

I/O OF THE MONTH

Metal mat mousing

I've got a nice Microsoft Wireless IntelliMouse Explorer V2.0, but occasionally it just doesn't decide to track on my Steelpad 3S. Sometimes the buttons don't even work. But when I use it on the desk or on a cloth pad it works fine. Could the pad be screwing up the radio frequencies?

I'm thinking of getting a new mouse instead. Logitech's MX700 seems nice because of its design and cordlessness. But what is the "MX Optical Engine"? Are there little pixies that run around inside doing what all pixies do and increasing gaming performance? Or is it some marketing thing?

Andy

Metal mousemats, like your aluminium 'Steel'pad, do indeed play hob with low power RF from cordless m (oh, all right, mice), especially if the mat's pseudo-earthed by your wrist or the desk. Moving the receiver around may help, and some mice are better than others, but nuking the site from orbit, I mean using a regular non-conductive mat, is the only way to be sure. The MX Optical Engine is less impressively known as the Agilent A2020 and S2020 sensor chips, which Agilent only sell to Logitech. They're the highest spec optical mouse sensors on the market today, but the STMicro sensors Microsoft are using at the moment aren't rubbish by comparison.

The sensor's not the end of the story, though. The MouseMan Dual Optical's two cameras were basically just a gimmick, but the MX 1000's laser illuminator gives much better tracking on lousy surfaces (like, say, a whiteboard, if that matters to you), and different lens designs can do a lot. A better quality lens gives the sensor a sharper image; a higher magnification lens gives more resolution, but more susceptibility to skipping. Sometimes mouse makers make, um, adventurous claims about their products' capabilities; they've been less prone to proudly announce frame rate or other specs that greatly exceed the hardware's limits of late, though.

There's a great page about all this here:
www.ida.net/users/oe1k/OpticalMouse

IOOTM wins a Logitech MX510!

Red and black – just like a Ferrari! Now includes bits of silvery plastic because it's ricey!

Capacious capacitors

I've come into possession of two very large capacitors. One is 110,000 UF 15V and the other is 72,000 UF 18V. I've measured the voltage of my UPS float charger and its around about 13.3 volts.

What'd be a rough estimate of the capacity of these caps in parallel? How does their combined 182,000uF capacity compare to lead acid amp-hours? Would my 600VA UPS last at least say, 5 minutes?

Lee Iriarte

The energy stored in a capacitor, in joules, is equal to 0.5*C*V^2, where C is the capacitance in farads and V is the voltage in volts. Your 111,000 microfarad cap (0.111 farads), fully charged (not just to 13.3V), would therefore store about 12.5 joules. The other one can store about 11.7 joules.

A joule is a watt-second – one watt of power delivered for one second. One volt-amp doesn't equal one watt for reactive loads like PCs, but even with a power factor of 1, a total of 25 joules with a following wind means you can power a 600VA load for... about 0.04 seconds. With a typical PC power factor, you'd get more like 0.03 seconds. Like you care.

Real capacitors like the ones you've got, which use only classical electrostatic energy storage, can be charged and discharged very, very quickly. Charge one of those caps up and

drop a screwdriver across its terminals and there'll be a spark, a bang, and a neat little two-point weld job; the cap won't exactly enjoy this, but it won't sizzle and pop like a shorted rechargeable cell.

The down side is that capacitor energy density is pathetic, compared with any electrochemical battery. The other problem with capacitors is that their terminal voltage directly reflects their state of charge. Unlike batteries, they don't keep much the same voltage for most of their discharge cycle; with caps, half full means half voltage.

Super-hyper-mega-monster capacitors overcome the capacity problem by using a hybrid electrostatic/electrochemical storage method (which makes them more susceptible to damage than real caps), but they don't fix the sliding voltage problems, so they too are no good as battery replacements. As a power buffer between, say, a more fragile battery and a motor/generator setup, though, they can work well. And with extra DC-to-DC converter hardware, they can behave quite like a battery (see tinyurl.com/3LF28, for instance).

Bunch-O-Puters

Can two computers be connected together in such a way to share all resources – processors, memory, etc – in a way economical to your average home user like me?

I'm asking this because I have read before how one could build a supercomputer by interconnecting several regular PCs and using all their processing power simultaneously. My objective is not to use this for any commercial reasons, just for the sheer learning experience of it all. I have done home networking before, and have a 10BaseT hub that I use on occasion to share files. I also have a homebuilt 1.7GHz Celeron, and an older 200MHz Sony that I would like to use, if possible. The problem is, I don't even know where to start, what I would need to buy, or how to set it up.

Derek M

Is it economically possible? Yes. Wouldn't cost you anything but time. It won't be easy or useful, though. You're talking about clustering, which as you say is the technology used to make some of the world's most powerful supercomputers. Clusters are a somewhat specialised kind of supercomputer; they're only useful for doing 'parallelisable' tasks that can be split into tons

of smaller processes that don't require much intercommunication between nodes, because the network 'pipes' between the nodes in the clusters aren't nearly wide enough to shift the gigantic data streams that non-parallelisable supercomputer tasks require. But a lot of supercomputer tasks *can* be split up this way, which is why so many clusters have been built.

Clustering is also big business in the 3D animation world; pretty much all of today's fancy computer-generated movie effects are generated by ranks of PCs or Macs, each chewing away at one frame at a time.

Clustering is useless for normal home and small business computer applications, though, because those tasks are seldom particularly parallelisable. You can get definite benefit from a dual CPU computer, but those CPUs aren't throttled off from main memory and the other core resources by a network connection.

For this reason, nobody's ever bothered to make a 'friendly' general purpose clustering system; 3D render farms are pretty easy to set up, but they can only do one thing. The Beowulf Project (**www.beowulf.org**) is general purpose and popular, but not among regular PC users, who'd have a hard time setting up a cluster and a harder one thinking of something to do with it if they ever got it working. There's certainly no way to just offload, say, half the task of running Photoshop filters to a second PC over a network cable; even if you used gigabit Ethernet, the transfer speeds between machines would kill the advantage.

But if you just want to do it for the experience of doing it, then you can go right ahead with the hardware you've got. The software to make a Beowulf cluster happen will cost you precisely nothing.

Black is black

A few days ago I decided to do a cable sleeve mod on my PSU. Unfortunately, during the process I got distracted and messed up the wiring in one cable branch. I removed all four wires from both Molex connectors and now I'm stuck without the proper combination for the middle two black wires. I believe interchanging the two black wire positions is not a problem because they share a common PSU ground. Am I right?

Mohamed Ali

Yes, the two black wires are exactly the same. The only reason there's two of them is because that keeps resistance down; for similar reasons, there are multiple wires for each rail on the main ATX connector.

Generally speaking, all PSU wires of the same colour are interchangeable, length permitting. You're actually likely to find that everything in your PC still works fine if you cut one of the black wires going to every Molex plug – not that I'm recommending you do that.

Because all of the grounds in a PC are tied to each other and to the chassis, you can cut some corners if you're using a multimeter to check rail voltages, or whatever. Unless you're actually worried that the ground wires and/or contacts for a given component aren't working right, you can just clip the negative lead of the multimeter to the chassis (I like to clip onto a grille on the PSU) and leave it there, rather than poke the negative probe into a Molex connector or something.

Bear in mind that fancy lacquer-finish PSUs may not make very good electrical contact with the case – the screws that hold them in place are often sufficient, though. It is, of course, easy to see whether this is the case, by probing around with a multimeter in resistance mode.

Trick or treat

You can only enter once per competition or you'll be disqualified. You must provide a postal address and phone number for prize delivery when you enter (not a PO Box).

5 x Atari Anthology for Xbox

Take a trip down memory lane and revel in the classics with Atari's Anthology. Jam-packed with 85 of your childhood favorites, Atari has created a displacement in the time and space covering every step of gaming history. Including games such as Battlezone, Red Baron, Crystal Castle and Centipede, Anthology caters for action, puzzle, sport and adventure game aficionados. This is a library of arcade originals to bring out the 'old school' in you. Just try and restrain your nostalgia long enough to get your entries in, as Atari (www.atari.com.au) has given us 5 copies to give away

Q From what Greek word does Anthology originate?

5 x USB computer desk lamps

No longer will the tiny, organic gears in your eyes tire as you strain to see your keyboard in the dark! Save your sight with this sexy USB computer desk lamp. Take the leap from moon tan to lamp glow and lose the blurred vision you have so loving nurtured in the confines of your poorly illuminated bedroom. Streamlined and stylish with a base no larger than your average mouse, this lamp will become a necessity for a late night frolic online or frantic last-minute work. Set your sights higher with this 5W wonder as PC Case Gear have given us 5 lovely desk lights to pass on to you

Q What is the medical term for nearsightedness?

10 x NVIDIA backpacks, USB watches and waist pouches

Obsessed with bags? We are. No matter the shape, size or contents, *Atomic* loves containers. So, when we found out that NVIDIA has it's own set of magnificent bag-like objects to give away, we just had to invade their Santa Clara fortress and nab a few. While we were there, we also acquired a number of 32MB USB watches – perfect for carting data on your wrist, of all places! Ergonomically designed and extremely sexy, you'll never want to give these treasures away, unless of course you're crazy. Get your entries in fast as NVIDIA has given us just 10 of these fantastic prize packs to download into your fashion drive

Q What is the heaviest load one person has balanced on their head and in what year was it?

5 x Seagate USB 2.0 Pocket hard drives

One day, the world will have little need for storage devices – we'll have so completely mastered the art of compression that a bazillion million terabytes of data will fit snugly into a molecule of air and all you'll need in order to carry around your universe-sized pr0n collection is a set of lungs, which conveniently, come standard on all human beings. Until then however, Seagate has its spectacular USB 2.0 Pocket hard drive. As the name says, this 5GB behemoth supports ultra-speedy transfer rate of 480Mb/s, and can store almost 74 hours of music. Tiny, compact and stylish, you'll never need to write stuff on the back of your hand again. Send in your answers now, because we have 5 of these babies just waiting to go out to a bunch of lucky *Atomic* readers.

Q Which is faster: USB Full-Speed or USB Hi-Speed?

Email entries to **win@atomicmpc.com.au** or post them to: Atomic, 52 Victoria St, McMahons Point, NSW 2060. Please send a separate entry for each competition Please ensure the competition name is the subject of the email, or is displayed clearly on the front of the envelope. The closing date for entries is 15 March 2005. Winners will be announced in *Atomic 52*

Atomic 48 winners: 10 x Steelpad S&S Professional gaming mouse pads Q. Damascus steel contains a high amount of what element? A. Carbon. M. Goalder, Ipswitch, QLD. A. Burrow, Toowoomba, QLD. J. Armbrecht, Alice Springs, NT. D. Noreika, Waverley, NSW. D. Grimsey, Biloela, QLD. A. Adams, Eltham, VIC. M. Huff, Bridgeman Downs, QLD. D. Silman, Greenslopes, QLD. D. Foster, Wetherill Park, NSW. B. Yip, Auburn, NSW. 10 x Plasma balls Q. Not including plasma, what are the other three states of matter? A. Solids, liquids and gases. A. Rosenzweig, Gawler, SA. R. Wong,, Glen Waverley, Vic. S. Kennedy, Golden Grove, SA. B. Thornton, Arcadia Vale, NSW. E. Shaedow, South Strathfield, NSW. N. Steenland, Shailer Park, QLD. K. Vandenberg, Nowra, NSW. C. Chen, Chester Hill, NSW. D. Abdalla, Guildford, NSW. P. Gartner, Mt Lawley, WA. 5 x GameCom Halo 2 Xbox Live headsets plus 5 x Halo 2 Q. In business and finance sectors, a 'covenant' is a what? A. A clause in a mortgage that obligates or restricts the borrower which, if violated, can result in foreclosure. G. Fry, Princes Hill, VIC. D. Fletcher, Tomerong, NSW. D. Edye, Monash, ACT. P. Bansi, Stretton, QLD. M. Furmage, Sandy Bay, TAS. 5 x Vietcong: Purple Haze Q. How long was the second Indochina War and in what year did it end? A. 21 years, 1975. C. Ruffin, Wishart, QLD. A. Huynh, Belmore, NSW. D. Hammond, Latham, ACT. I. Pratt, Kaleen, ACT. M. Willis, Cardiff South, NSW.

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That is why we call it the beast. Trust in us, for we understand it all too well – just as if it were our home town, or a comfortable pair of woolen mittens.

To help satiate that lustful longing, *Atomic* and Alienware have teamed up to provide one lucky subscriber with the hotbox to end all hotboxes, the hardcore gaming rig that can mercilessly own pretenders and lamers alike.

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- Creative SoundBlaster Audigy 2 ZS high definition 7.1 surround sound card
- Alienware 'Space Black' keyboard and IntelliMouse Explorer 4.0 'Space Black' mouse
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Winner *issue 49*: M. Bettridge, Port Pirie South SA

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Tripping the LAN fantastic

Maurice 'Moz' Ford reflects on the power and passion of modding.

LAN's are great aren't they? A whole bunch of unhygienic, socially inept people crammed in a room, together with their PC's and a mind-boggling stockpile of caffeine. Games. Leaching. The glow of a hundred machines blinged-up to the nines. How could you not have fun?

The thing that epitomises LAN's is the PC's themselves. I'm amazed at how much they have evolved over the years. Beige is gone. It's been replaced by the most astounding array of technological artwork.

Strolling through the aisles, sidestepping coke can towers and rumpled geeks in sleeping bags, you peruse the cases on display. The stand outs in the crowd are usually the ones that are owned by people with money. Lots of money. Aftermarket water cooling setups, million dollar paint jobs and internals that were crafted by award winning European fashion houses. These are the rigs we would buy if we won lotto.

But the PC's that earn the most respect are not bought. They're built. For the Atomican, case modding is beyond a hobby. It's practically a religion. We've been taught to look beyond the norm and push the very boundaries of the art. Afterall, some of us can't afford pre-built machines, and as we know necessity is the mother of invention.

Ideas are forged during the drudgery of work or school. Cases are chosen with the same care that a master sculptor selects his stone. Modifications are performed in backyard sheds, darkened bedrooms or on expensive leather couches – the sort that you shouldn't use power tools on. Cases are built from the ground up, using nothing more than cast off household appliances or the gutted remains of your sister's makeup box. PC's lovingly created with the literal blood, sweat and tears of the true fanatic. Yes, it's a dangerous hobby, as is often proved by the Veterans.

You can always spot a Veteran modder. They wear the marks of their trade. Nicks and scratches, often puckered with stitches. Skinned knuckles. Heat related disfigurements. Curiously absent appendages.

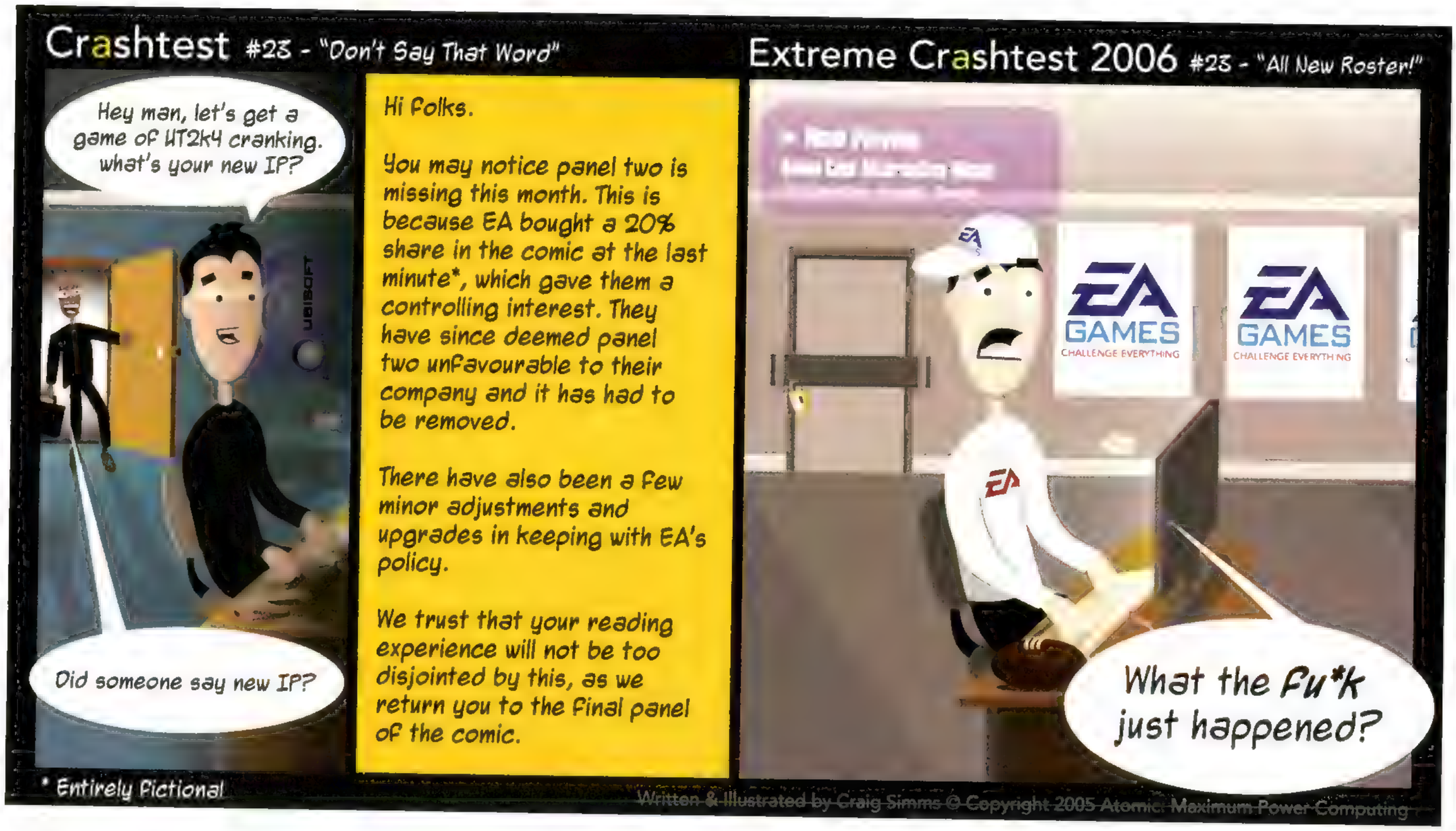
Although great sources of information, Veterans are unreliable mentors who commonly suffer from Post Traumatic Stress Disorder Encouraging the retelling of a modding experience can produce flashbacks in a Vet, often resulting in violent Dremel attacks.

While these ghastly walking reminders serve to discourage us from our modding ways, we are still drawn to the art. Danger just adds to the appeal. And let's face it – The opposite sex digs scars. Our passion grows and our garages fill with failed mods. With each new venture, a prayer is offered to the growing pile of discarded cases – The Shrine of Mods Past.

We've come a long way. Times have changed. The chances of seeing a beige case at a LAN are up there with seeing UFO's or an honest politician. Browse any PC store and all you see is pre-fab bling. Five years ago we would have happily traded our grandparents for this stuff. Now? It's kinda like watching the *Star Wars* trilogy for the 100th time. Fun, but the edge has gone. (R2-D2 was *so* crying out for a Perspex window and a few UV fans.)

So what next? Some say that modding has become boring. That it's all been done before. They may be right. But the true Master knows that life is all about change. Evolution. We as Atomicans, sit not upon the accomplishments of our past, but use that glory to fuel our future. And oh how brightly it burns.

Don the shades and hold onto your hats. The ride is just getting interesting!



Trivial Geek Questions

Well, they're not so trivial to **Angus Kidman.**

Welcome to *Trivial geek questions*, the advice column that looks at life outside the box, or *case*, depending on how you look at it.

In this section, we answer the burning questions that geeks everywhere lie awake thinking about. For example: 'What happens if I don't change my underpants for a week?' or 'When Bill Gates gives money away, do people ever try and give it back?'

Any question that pops into your head as a consequence of a serious-bordering-on-insane passion for PC technology, but which isn't actually technical in nature, is fair game for our crack research team. Submit your questions to **tgq@atomicmpc.com.au** or via the *Atomic* site, and we'll answer the best ones here each month!

Q: If I excessively overclock my PC and my house burns down as a result, will I be covered by normal house insurance?

AK: Insurance agents are generally fairly humourless people.

This isn't necessarily because they were born with a personality bypass – having to spend all day dealing with people either facing highly improbable and tragic circumstances or attempting to pull off a massive con job is enough to make anyone a bit bitter and twisted.

However, being bitter and twisted does not mean that they're going to pay up if one of your overclocking experiments gets a little bit out of hand and the fire brigade has to be called in, even though fire is commonly included in a majority of insurance policies.

Check out this clause from a fairly typical household contents insurance policy:

We do NOT cover loss or damage when you, your family or anyone acting with your given or implied consent, deliberately causes or contributes to loss, damage or legal liability.

As it's hard to 'accidentally' overclock, your attempts to boost performance could well serve as grounds for disallowing the claim. You could always tell your insurer the fire was caused by a freak cooking accident, but when they discover you probably don't know what a stove actually looks like they'll squelch the claim faster than you can say 'frontside bus'.

Of course, every insurance claim is assessed individually (at least in theory), so if you have burnt down your house in a bid to squeeze more megahertz out of your beast, you might still want to give it a try!

Q: Which widely-available soft drink has the best caffeine hit?

AK: Speciality colas such as Jolt have long enjoyed a healthy reputation amongst night owls for their caffeine loading, and as our table shows, they still lead the field when it comes to caffeine levels.

If you're forced to choose from more common supermarket drinks, the diet varieties generally have more kick than their sugar-loaded counterparts. Note also that US imports may have different levels; for instance, Mountain Dew is caffeine-free in Australia but caffeine-rich in the States.

None of this is to say we're in favour of slurping caffeine-heavy drinks like manna from heaven. Well, maybe just a little.

In the end, though, a geek has to drink what a geek has to drink.

Mmm.. Caffeine

Drink	Caffeine (mg/100 mls)
Coffee	**35-55**
Coke	**9.7**
Diet Coke	**12.9**
Jolt	**20**
Pepsi	**9.6**
Pepsi Light	**10**
Pepsi Max	**15.4**
Fanta/Sprite/other lemonade drinks	**0**
Water	**0**

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'Pheremoaning'. Noun. The sound made by male geeks introducing themselves to new female forum members.

Tinkering with PCs has long been a predominantly male domain. So unsurprisingly, most participants in the *Atomic* forums are proud owners of a Y chromosome.

But not all.

According to eyewitness accounts from various *Atomic* meets, some of the longest-serving members of the forums are actually mammary-toting, oestrogen-enriched descendants of Eve.

In other words, female.

For example there's Gramyre, the no-BS Queen Bee moderator of the forums. And DonnaGem, soft-centered mother hen. And Silhouette, Chaos.Lady, Evil Megz, Clsco, and ... really, way too many to list.

So, what happens when females visit a virtual world inhabited by young, socially-awkward and hormonally-developing geek guys, unencumbered by normal, physical constraints?

The answer is: *everything*! Love, jealousy, hate, confession, compassion, sin, regret and redemption – think 'soap opera on steroids'.

The women of *Atomic* have strategies for handling undue male attention. Some just laugh it off. Others cut a swathe through the hordes of suitors with a whiplash wit. Some outbloke the blokes.

Eventually, inevitably, the forums reach equilibrium again.

But the funniest thing about new gals joining *Atomic* is that some of them, funnily enough, actually *aren't*.

Every now and then, a male forum member will create a proxy account with a feminine name, and take a walk on the wild side.

Is it transgender yearning, or leisure suit larrikinism? Either way, outing their outing is a fine sport indeed.

– Virtuoso

potm 48

TransmissionDump's guide to girl troubles – *www.atomicmpc.com.au/forums.asp?s=1&c=1&t=55013*

Atomic is an open floor of open arms for people who need relationship advice. From wishy washy sympathy to 'just ditch him/her/it', there's no shortage of attention for broken or yearning hearts. What's in short supply though is brutal, no mucking around wisdom.

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hotbox of the month

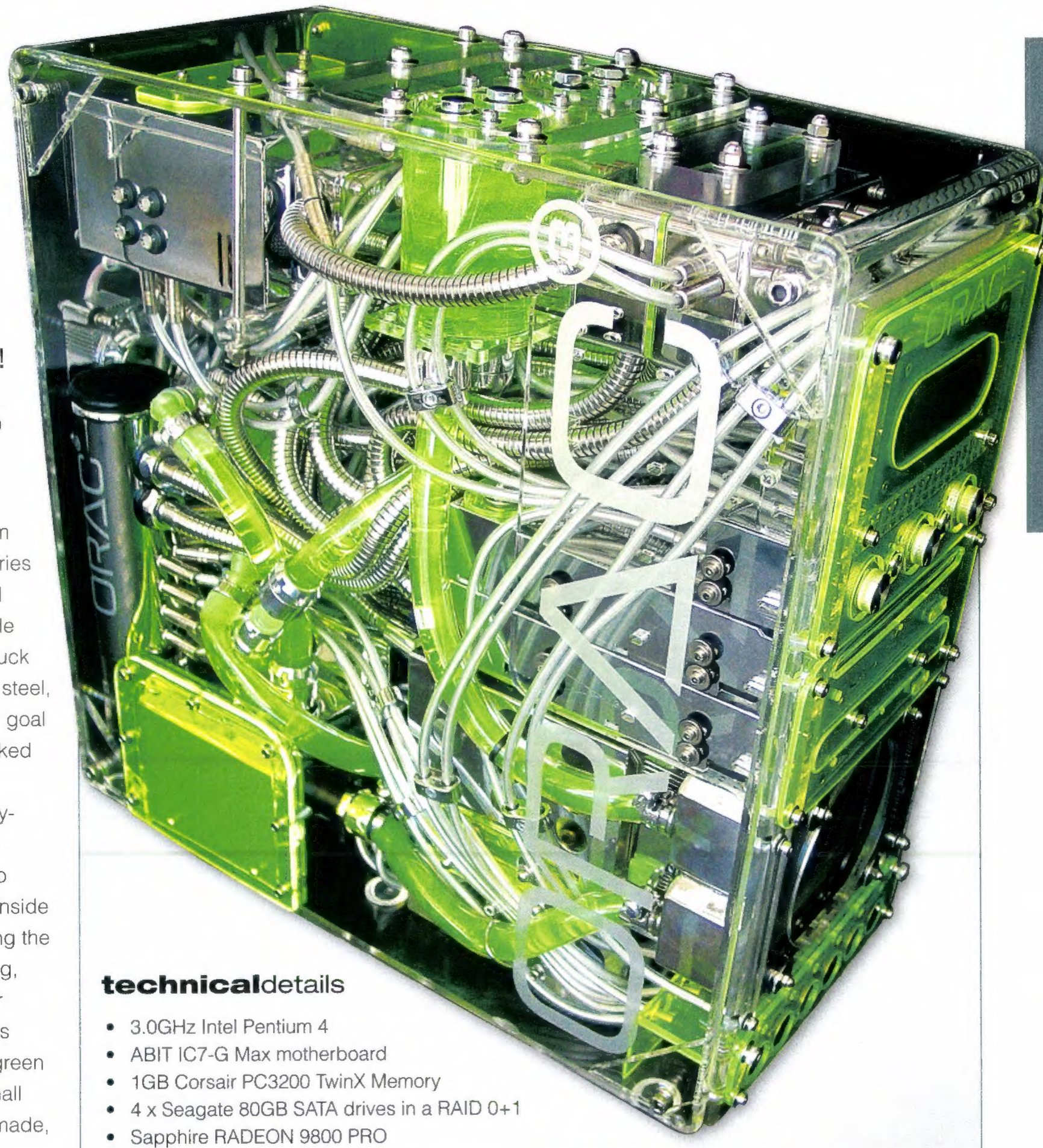
Welcome to the all new Hotbox page! Each month we'll feature the winning Hotbox of the Month as voted for online at **www.atomicmpc.com.au/hotbox.asp**. Not only do the winners get to show off their box in full glory for all to see on this page, but they also win an nForce3 based deluxe motherboard courtesy of Biostar!

G-gnome's Orac³

The inspiration behind this mod came from the computer Orac, out of the old sci-fi series Blakes-7. Besides the case, every internal component was extensively modded inside and out over a nine month period and I stuck strictly to the themes of chrome, stainless steel, neon green and transparent Perspex. The goal was to ensure nothing inside the case looked anything like an ordinary computer part.

I chromed or built chrome covers for everything, including the motherboard and PCI cards. I built two chrome junction boxes to extend the PSU and ran all of the cables inside 15m of steel shower hoses (including using the screw fittings) and 20m of aquarium tubing, with 50 chrome jack plugs to patch power to everything. Over 400 stainless fasteners were used in the build plus a lot of neon green Perspex! I paid a lot of attention to the small details, even down to things like custom made, backlit DVD buttons and case feet.

G-gnome



Fame, fortune, and free stuff can be yours! Send your Hotbox to hotbox@atomicmpc.com.au and include the following:

- 3-4 high resolution, well lit, pictures
- A 250 word description of how you made it, the obstacles you overcame, the tools you used, and your inspiration.
- A detailed list of the machine's specs.

technicaldetails

- 3.0GHz Intel Pentium 4
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- 1GB Corsair PC3200 TwinX Memory
- 4 x Seagate 80GB SATA drives in a RAID 0+1
- Sapphire RADEON 9800 PRO
- Creative SoundBlaster Audigy 2
- Antec True Power 550W PSU
- Danger Den Maze3 CPU and NB waterblocks, Maze4 GPU WBlock
- Eheim 1250 Pump, ½" ID Tygon tubing
- Black Ice Xtreme chrome radiator
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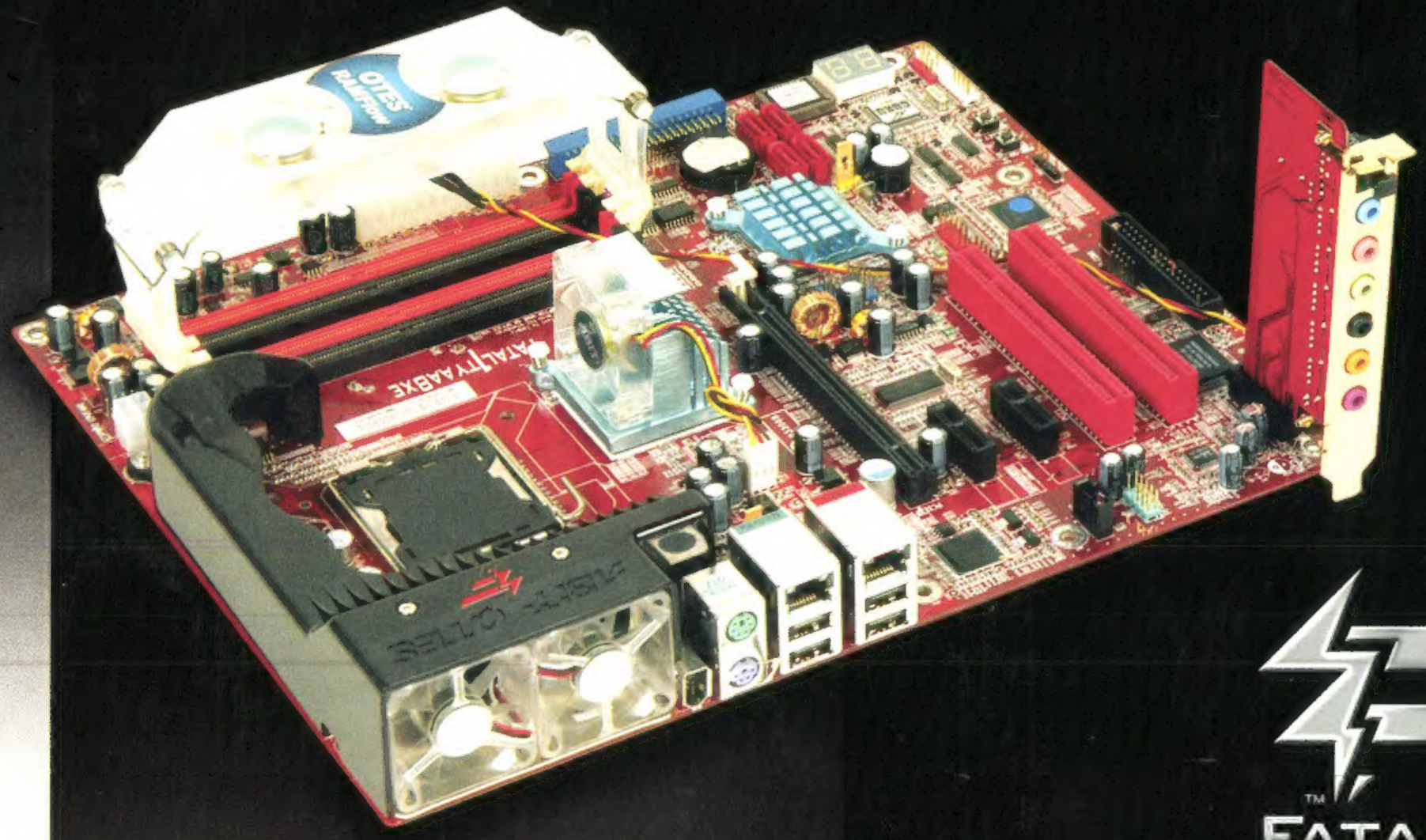

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SA	Little Computers	(08) 8365 8800	www.littlecomputers.com.au
	Getright Computers	(08) 8231 0622	www.getright.com.au